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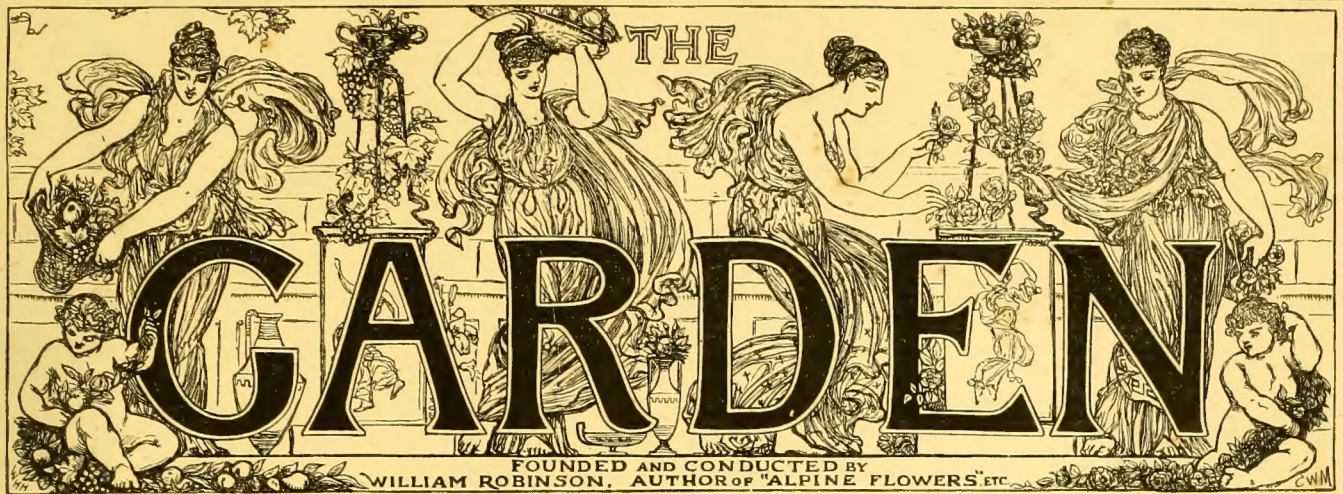
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1874



ROBERT MARNOCK.



AN

ILLUSTRATED WEEKLY JOURNAL

OF

GARDENING IN ALL ITS BRANCHES.

THIS IS AN ART
WHICH DOES MEND NATURE: CHANGE IT RATHER: BUT
THE ART ITSELF IS NATURE.—Shakespeare.

VOL. VI.

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CHRISTMAS, 1874.

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TO

MR. ROBERT MARNOCK,

LANDSCAPE GARDENER,

AND FORMERLY CURATOR OF THE ROYAL BOTANIC GARDENS IN THE REGENT'S PARK,

THE SIXTH VOLUME OF "THE GARDEN"

IS RESPECTFULLY DEDICATED.

W. R.

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MR. ROBERT MARNOCK.

THE accompanying portrait is that of MR. ROBERT MARNOCK, a gentleman possessing a world-wide reputation as a landscape gardener. MR. MARNOCK'S professional career may be said to have commenced with the laying out of the Sheffield Botanical Gardens about the year 1837. His success in that case led to his being appointed by the Royal Botanic Society to form their new garden in the Regent's Park, and of the happy manner in which that work has been executed it is unnecessary now to speak. It so clearly bore the impress of a master mind in the art of landscape gardening, that from that time MR. MARNOCK ranked as one of the leading men in his profession. In MR. MARNOCK'S case the artist and practical landscape gardener have been so happily combined, that, in the numerous works executed under his direction it would be difficult to find one in which the highest principles of the art are not well shown. The same breadth of treatment, grace of outline, and easy and natural undulations which characterise the Regent's Park Gardens may be traced throughout most of his other works. In selecting a few from the many places either laid out or renovated by him, it may be sufficient to mention one or two of the more important, such as Warwick Castle, Hagley Hall, Draycott, Rood Ashton, Oak Lodge, Kensington; Hall Place, Tonbridge; Berry Hill and Park Place, Bucks; Greenlands, Henley-on-Thames; Wimbledon House, Surrey; Rousdon, Devon; Possingworth, Sussex; Eynsham Hall, Oxon; Wadhurst Park, Sussex, and others too numerous to be here specified. In 1853-54 he laid out the grounds of the villa San Donato, near Florence, for Prince Demidoff. In addition to many contributions to the horticultural and botanical press, he was for several years horticultural Editor of the "Gardeners' and Farmers' Journal." As director of the gardens and exhibitions of the Royal Botanic Society, his good taste, skill, and courtesy were invaluable in making the Regent's Park shows worthy of their great popularity, both with the public and exhibitors. MR. MARNOCK was the first to arrange a flower show in a picturesque manner, and well he succeeded. Indeed, notwithstanding the many and meritorious attempts in the same direction that have since been made, the arrangements for flower shows in the Regent's Park are still admitted to be the best. On his retirement from the curatorship of the Royal Botanic Gardens, the exhibitors presented him with a handsome testimonial, as an expression of their esteem for the way he had managed the exhibitions of the society. For genuine kindness and courtesy to those brought in connection with him, MR. MARNOCK has, through a long and honourable life, stood pre-eminent; and it is not too much to say, that few men have secured so many friends and made so few enemies. With respect to his more recent works, some of which are enumerated above, our own opinion is that as regards design, and taking all the circumstances and capacities of each place into consideration, they are the most beautiful, and in all ways satisfactory, we have seen in any country.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

LEICESTER SQUARE AS A GARDEN.

THE public, through the daily and weekly journals, know all about the recent history of Leicester Square; it falls to us to discuss, from a purely professional stand-point, the garden into which the square has been converted. A garden of any kind, in lieu of the nuisance of Leicester Square, with its fragments of the leaden horseman, its dead dogs and cats, and its decaying and not inodorous rubbish of various kinds, is a precious boon to the district, and the most notorious eyesore in London is seen no more. But we have scores of squares needing like changes; and the manner in which this transformation has been done, being likely to influence future work in the same direction, it is desirable that the points in which the design of Leicester Square is glaringly deficient should be fully made known to all interested in such improvements. The first and chief defect in the new garden is that it is too much "cut up." There is a broad walk immediately circling the fountain, and another walk all round, between that and the enclosure, and then there are likewise four other walks, one from each of the four entrances, intersecting the external walk, and leading directly to the one round the fountain. This needless prevalence of gravel, instead of turf, is a radical mistake; it is a repetition of the tones of the surrounding houses; it wears the eye, and destroys all repose. It is a similar mistake to that committed in planning the garden of the Royal Horticultural Society at South Kensington, in which case the elaborate pseudo-gravellings were varied in tone by the adoption of different coloured brick-dust for different walks, with the view, perhaps, of not being too dependent for colour upon the gardener and florist. But the effect is cold, hard, and uninteresting; there is, also, in that example of London gardening a super-abundance of statuary, and an overdone and glaring fountain, far too big for the area in which it is placed, which we notice here, because there are very similar defects glaringly noticeable in the laying out of the new Leicester Square garden. The fountain, for instance, like that of the Horticultural gardens, is too big for the space, while the lesser pieces of sculpture dotted about would be better away. The walks, as before observed, are too many; and the area for the refreshing green of turf is thus made too small. In short, there is far too much of the architect and sculptor, and too little of the gardener. This is a great, but, very common, defect in the creation and embellishment of town gardens. The planning of the turf and walks, and the selection of trees, and the forms and situations of the plantations, should be under the exclusive management of an eminent gardener. The gardener, on the other hand, must not attempt to design the fountains or statues, just as the architect or sculptor must not meddle with the special work of the gardener. We have, in the overdone architectural gardening at the head of the Serpentine, a hideous example of the results of a contrary system to the one advocated. But, to return to Leicester Square, let us see what could be done to relieve the eye from that intolerable deal of gravel walks. Either the one round the fountain, or the external one might be altogether suppressed. The centre should have been an open expanse of verdant turf, and the only walk required, was a sufficiently wide one around the Square, with the needed number of short walks leading from the entrance to this. In the centre where there ought to be repose, there is nothing but stone, chairs, and gravel—and confusion. As for the planting, much is wrong—both as to the kind of trees selected, and the manner of their disposal as to position. It is very curious that in spite of all the experience of the constant failure of evergreens in the London squares, that no kinds of single deciduous trees (or scarcely any) have been employed in the planting of Leicester Square; Rhododendrons and Portugal Laurels are the plants chiefly made use of, though a moment's thought, with all the experience that our town

plantations furnish, would have shown that trees which do not shed their leaves annually become so encrusted in soot after a single winter in the midst of London smoke, that they dwindle into miserable and stunted objects, anything but ornamental; and, indeed, wretched to look upon. Deciduous trees, on the other hand, which are provided by Nature with a new suit of greenery every spring, suffer comparatively little injury from the smoke-plague of our myriad chimneys. In Lincoln's Inn Fields, Brunswick Square, Russell Square, and other spacious enclosures, the deciduous trees, from Lilacs up to Limes and Planes, present, on the contrary, as fine an appearance as they do in the purest country air. The expensive standard Portugal Laurels, and fine Rhododendrons now planted in Leicester Square, may simply be looked upon as planted there to die, within a couple of years certainly, and to become wretched objects after the effects of a single winter's smoke work. It would seem, in matters horticultural, either nobody observes what goes on in London or nobody takes a lesson from what occurs. What has become of all the very expensive Portugal Laurels and other fine evergreens planted in the Horticultural Gardens at South Kensington? Let anyone go into Hyde Park now and see the scare-crow Cypress along Park Lane, and the miserable Conifers near the Corner, and judge how unwise it is to plant many evergreens even in our parks. But we are rich and foolish enough to go on buying and planting costly evergreens, and carting them off, when nearly dead, to the rubbish-heap, replacing them again with costly nursery specimens. One thing is certain—that the only way of preserving in good health the shrubs planted in Leicester Square will be to transport them bodily to some pleasant country every autumn, bringing them back in early summer. As regards the central fountain and statue, it is a fairly-designed, well-executed, piece of work, when judged by itself; but it occupies far too much space in a small enclosure like that of Leicester Square. The diameter of its inner circle, without the external one, with its complications of bracket work and vases, would have been in better proportion with the area in which it is placed. Again, the marble fosse or fosses occupying the space between the inner and outer circuit of the design are fitted for the reception of water and not for the display of flowers, with which they are now filled. There is also an extraneous feature in the fountain work, in the shape of a metal guard or gallery, the effect of which is puerile and incongruous, and should be removed. The effect of the metal railwork of the enclosure is, on the other hand, good and appropriate; and the novel feature of reducing it to about half the height of the usual enclosures of our squares is a manifest improvement, if our London roughs, who are certainly getting a little smoothed down, can be induced to respect it as a boundary line at a time when the gates are closed. It is only right to add that, though Mr. John Gibson, jun., has carried out the work he is not responsible for the design, which is, we believe, wholly that of the architect. Hence, of course, the reason why gravel and stone usurp the place of Grass and flowers. Let us hope that the absence of the only vegetation that can thrive in Leicester Square is not intentional, and that it will be remedied in autumn. Should this be so, we trust those trees which, like the Lime, become rusty and lose their leaves early in summer, may be avoided, and such as the good kinds of Robinia, which preserve the freshest verdure till late in the autumn, not forgotten. A square, with a few dying evergreens in winter, and without any more stately vegetation, would prove a sorry prospect at any season. Trees that will bear the London climate and smoke, and which attain to a considerable size when full grown, would eventually become a fine feature in Leicester Square; to have the surrounding houses partially concealed by their uppermost branches, and to walk among their shadows in the warm days of an English summer, might become a pleasure to many generations of Londoners. It should not be forgotten that the many seats provided will be useless, and the gardens not frequented in hot weather, if there be no trees to give shade. The opening day (Thursday) was of the kind that makes even a garden, without shade, far from agreeable. It is hoped that this bold innovation will lead to many of the dismal squares of London being opened and improved.

NOTES OF THE WEEK.

— THE following Lilies are now in bloom at the gardens, Weybridge Heath, viz.:—*Lilium auratum*, *L. Brownii*, *L. canadense flavum*, *L. c. rubro flavum*, *L. c. rubrum*, *L. californicum*, *L. columbianum* (just over), *L. coridion*, *L. croceum*, *L. giganteum*, *L. Humboldtii*, *L. Kramerii* (very large mauve-purple flower), *L. longiflorum*, *L. parthenseion*, *L. parviflorum*, *L. philadelphicum*, *L. puberulum*, *L. Thunbergianum atrosanguineum grandiflorum* (very fine dark colour), *L. T. bicolor*, *L. T. aureum*, *L. T. marmoratum*, *L. T. maculatum*, *L. Washingtonianum*, white flowered; also a variety of it sold by Messrs. Backhouse—this has almost white flowers which changed to purple, a handsome flower—*L. W. purpureum*. The following so-called varieties of *L. umbellatum* were bought under the following names; but, although they were all in bloom side by side, neither Mr. Wilson nor his gardener could recognise wherein their differences consisted; they are fine showy flowers, viz.:—*L. u. grandiflorum*, *L. u. erectum*, *L. u. maculatum*, *L. u. Sappho*, *L. u. fulgidum*, *L. u. Incomparable*, and *L. u. punctatum*.

— MR. STAPLETON, of Spring Grove House, Isleworth, writes to us as follows:—"The thunder-storm, which passed over this neighbourhood on the 24th ult., will be long remembered on account of the tremendous fall of hail with which it was accompanied. In a few minutes the ground was thickly covered, so that it presented quite a wintry appearance. The hailstones being unusually large, much damage was done to the fruit crops and bedding plants. Strawberries were deeply indented by the hailstones, which has caused them to rot upon the ground; Pears on espaliers were also much damaged, the fruit, wherever exposed, being marked as if by shot. In the flower garden Coleuses are literally stripped of their foliage, and Geraniums completely riddled; Elm and Chestnut trees also suffered severely. The storm does not seem to have extended far, as but a short distance from Spring Grove nothing was known of it."

— A MAGNIFICENT specimen of *Odontoglossum vexillarium* is now in flower in Mr. Rucker's well-known collection of Orchids at Wandsworth. The plant in question has one young pseudo-bulb, which has produced four flower-spikes, bearing in all fifteen flowers of remarkable size and substance. This variety has blossoms of a soft rosy hue, and is one of the finest *Odontoglossum* we have yet seen, the individual blooms and the entire plant being far finer than the specimen portrayed so faithfully by Fitch in the current number of Bateman's beautiful "Monograph" of the genus *Odontoglossum*. Another plant bears thirteen deeper-tinted flowers, rather smaller in size than those to which allusion has just been made, but still extremely effective. These plants more than confirm the excellent opinion formed of this *Odontoglossum* by its fortunate introducers, Messrs. Veitch, who, it will be remembered, exhibited a specimen of it last year at South Kensington with twelve flowers on two fine spikes. It appears to possess the singular habit of producing a spike from the axil of each sheathing leaf; while, in exceptionally robust and well-grown plants like Mr. Rucker's, a spike is often produced from the apex of the last-formed pseudo bulb. Even *O. Alexandræ*, charming as it undoubtedly is, is inferior in beauty to this fine kind, which, when it becomes thoroughly established, will be found to be one of the most beautiful and effective of all Orchidaceous plants.

— AN interesting communication was made by Mr Darwin to the Scientific Committee of the Royal Horticultural Society at their meeting on the 1st inst., relating to some observations he had recently been making on *Pinguicula*. The reader will remember that he has already published some remarkable facts regarding the seizure of flies by *Dionæa* (Venus's Fly-trap) and *Drosera* (Sundew), which lead to the conclusion that the insects entrapped are made use of for the alimentation of the plant. After the fly has been seized by the leaf, an acid secretion distils from the latter which enables it to digest the nitrogenous matter in the insect, which is absorbed into the plant, and the rest rejected. Mr Darwin has been regarding the genus *Pinguicula* from the same standpoint. Its leaf, indeed, has no hairs by which either to entangle or retain flies or other insects; but it is covered with an adhesive secretion, which, if it does not at once glue any insect that alights on it to the spot, at least prevents its escape as effectively. The leaf is reflexed at the margins, so as to become a kind of tray, over whose edge the entangled sticky insect must find it difficult to clamber. Further he finds that the *Pinguicula* digests albuminous subjects placed or alighting on its leaf, in the same way as the Sundew or *Dionæa*. If an insect or piece of meat, or a Cabbage seed (a seed rich in albumen), or, it would almost appear, any other organic substance is placed on the leaf, it, like the Sundew throws out a secretion, which, as in it, is acid, and which acts as a solvent to the albuminous matter exposed to it. Moreover, the leaf becomes slowly reflexed over it, and distills this secretion above the object as well as below it. After twenty-four hours it reverts to its natural position and the secretion is re-

absorbed. Mr. Darwin infers that the purpose of this is to feed the plant. We shall await the publication of his paper with impatience, and until we have had the opportunity of reading it deliberately and digesting it at leisure, we shall reserve our judgment upon it.

— THE Place du Trône, in Paris, is about to be converted into a public garden, with the usual accompaniments of Grass, flowers, shrubs, trees, and fountains.

— MESSRS. HOOPER, of Covent Garden, have sent us a small spike of *Lilium Washingtonianum* in flower. They state that when the blooms first open they are quite white, and that they afterwards change to lilac, the two colours on the different spikes having a beautiful effect. It is, without doubt, a chaste and charming Lily.

— SOME of our contemporaries are enthusiastic about having found the *Genista virgata*, of Madeira, a handsome shrub, in flower in Mr. Waterer's nursery. It is, however, not so rare as one would suppose from this discovery; a large shrub of it has for many years adorned the long mixed border in Kensington Gardens.

— THE flowers of the White Lily (*Lilium candidum*) having expanded in Paris from the 13th to the 17th of June, the harvest in the basin of Paris ought to commence about the 20th of July. This observation is founded upon a relation that appears to exist between the flowering of this plant and the ripening of cereals. So many days (it is said) as the flowering of the White Lily precedes the festival of St. John, just so many days before the 1st of August will the cutting of cereals commence. During all the years that we have made this remark, says Mr. Carrière in the *Revue Horticole*, facts have confirmed it.

— THE different varieties of the beautiful *Iris Kämpferi*, are generally considered somewhat difficult to manage; but in the Wellington Road Nurseries there are now numerous beautiful and distinct forms of this *Iris*, varying from pure white to the richest violet-purple, all in full flower, planted out in the open ground. Although perfectly hardy, it increases but slowly, and is on that account rarely seen outside the few trade collections in which it is grown. Messrs. Henderson's plants are growing in ordinary garden soil, but it is thought they would do even better in a moist situation. One fine variety of *I. Kämpferi* exhibited by Messrs. Henderson the other day at South Kensington, bore some resemblance to a large purple *Clematis*; its six petals were perfect, i.e., they were all of equal size, instead of having three partially suppressed, as is generally the case in the group to which this *Iris* belongs. It was stated at the meeting in question, that the deviation from the normal type just alluded to, distinguished this *Iris* from *I. lavigata*, which it otherwise closely resembles.

— AT a meeting of the Court of Common Council, held the other day to further consider the advisability of rebuilding Farringdon Market, after considerable discussion, the following amendment was made by Mr. Isaacs:—"That whereas the site of the present Farringdon Market is of considerably greater value than that adjoining the Metropolitan Meat Market Extension; and that whereas the latter site has the advantage of frontages in four streets, and of contiguity to three principal lines of railway, which would enable growers living at a great distance from the metropolis to supply the London markets with fresh vegetables at prices considerably below the current values; and that, whereas a market could be erected on the new site without displacing the trade at present carried on in Farringdon, this court is of opinion that a new fruit and vegetable market should be erected on the site adjoining the Metropolitan Meat Market." Upon a division, this was carried by 55 to 33 votes. The Markets Committee were then instructed to obtain plans and estimates for a new fruit and vegetable market on the site adjoining the Metropolitan Meat Market, and to report to the court.

— A NOBLE plant of *Cordylina australis* (Hooker)—*Dracæna australis* (Forst. Prodr.)—is now finely in flower in the Botanic Garden, Glasnevin. It is a New Zealand plant, and not the Norfolk Island plant, which goes under the name of *Cordylina australis* in our gardens. The latter is *C. Baueri* (Hooker)—*Charlwoodia australis* (Sweet), and *Dracæna australis* ("Bot. Mag.")—which, though often seen in our large conservatories, is not a hardy plant in any part of the British Isles. The plant at Glasnevin, as we learn from Dr. Moore, has stood without any protection during the last seven years, and has now a stout straight stem a foot in circumference, and nearly 14 feet high. The panicle of inflorescence is nearly 2 feet wide at the base, and rather more than 2 feet from base to apex. This fine *Cordylina* was received at Glasnevin, from the Oxford Botanic Garden, thirty years ago, when it was a very small plant; it got too large for the plant houses and was, consequently, put out-of-doors, where it has succeeded admirably. *Chamærops Fortunei* (Chinesis) is also flowering freely out-of-doors at Glasnevin this year; it has been planted out seven years.

THE FLOWER GARDEN.

ORNAMENTAL GOURDS.

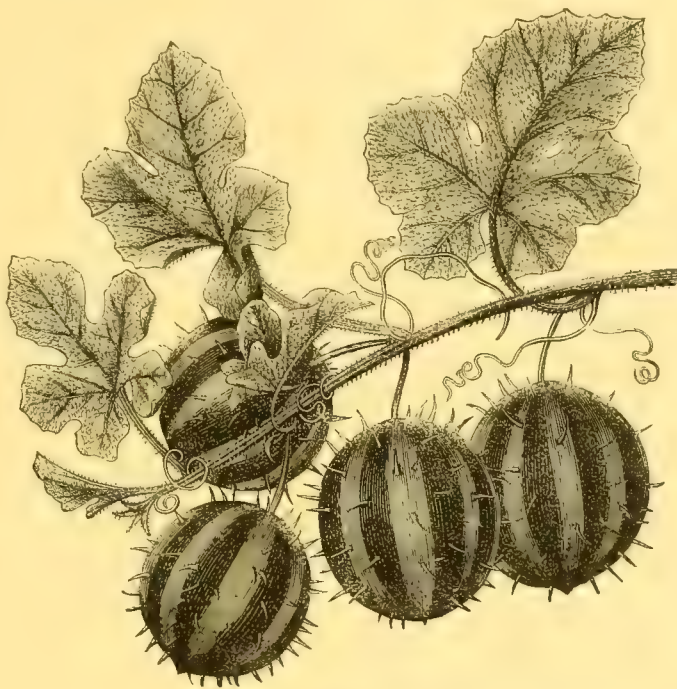
THE genus *Cucumis*, familiar to all of us in the form of Cucumbers and Melons, is far more widely known as the source from which we derive these much esteemed esculents than as affording subjects which might be applied to purposes of an ornamental character. It contains, however, many species which possess such a unique and *bizarre* aspect, that they claim a large amount of attention from those who seek after that variety of form and expression, which, irrespective of any pretensions to intrinsic beauty, contributes to lend—if only from mere contrast—an additional effect to many well-studied combinations of fine-flowered or fine-foliaged plants. The cultivation of the Gourd family in our flower-gardens has hitherto been strangely neglected, and our object now is, by a description of a few of the most remarkable species, to direct more general attention to it. On the Continent, Gourds have been long esteemed, either for their singularity or the handsome colouring of their fruits. Being climbing plants, they are employed for covering arbours, trellises, &c., and, although most of them are annuals, the peculiar effect which they produce, will repay the small trouble of an annual sowing. The subject of our illustration, the Gooseberry Gourd (*C. grossularioides*) is one of the handsomest of the family. It forms creeping stems about 8 feet long, and of the thickness of a goose-quill. The fruit, which are produced in great abundance, are as large as a good-sized Gooseberry, and are finely marked with alternate longitudinal bands, of very dark and very light green. They are so bitter in taste as to be inedible, and so numerous that a single plant will often bear from 500 to 800 fruit. Although the plant is a native of North Africa and Arabia, it can be advantageously grown in the open air in this country during the summer, and may either be sown, in the place where it is intended to remain, about the middle of May, or, in a hot-bed under a frame, in March or April, and afterwards transplanted, with a good ball, into a bed of spent hot-bed material, or into a hole filled with stable-manure, covered with some inches of soil. Although not absolutely necessary, frequent waterings during the heats of summer will be found useful in encouraging a vigorous growth. Another very singular species is *C. metuliferous*, which grows about 4 or 5 feet high, and bears largish egg-shaped irregularly-nibbed fruit, 4 to 6 inches long, studded with huge prominent spikes, and of a fine scarlet colour when ripe. It is supposed to have been first discovered by Dr. Livingstone in Southern Africa, in the Caffrarian district.

The variety called Teasel Gourd (*C. dipsaceus*), a native of Central and Eastern Africa, grows about 7 feet high, with very slender stems, about as thick as a goose-quill. The fruit is about 3 inches long, of a regular oval shape, yellow when ripe, and densely covered with long stiff hairs, so that it very much resembles the flower-head of the Teasel before the flowers have expanded. It presents a marked contrast to the fruit of many of the other species. In culture, it requires to be treated in the same manner as the Gooseberry Gourd. A perennial species from Nubia and Abyssinia (*C. Figarei*), found on the mountains of those countries at 6,500 feet

altitude, very much resembles the Gooseberry Gourd in the appearance of its fruit, which, however, is somewhat larger, and destitute of the long spines which are exhibited by the former. It merely bears a few very short scattered points, which are chiefly collected around the base. Five varieties of this species have been noted. In Abyssinia, the roots of this plant, which possess a very bitter property, are said to be employed as a remedy in cases of madness. Enough, perhaps, has been stated to show the wonderful variety which exists amongst the fruits of this family of plants, and we shall conclude with the following enumeration of some species now in cultivation, which present a most extraordinary diversity in the shape and colouring of their fruit, and seeds of which are easily procurable through any of our leading nurserymen. Among the finest of the larger-fruited sorts are the Turk's Cap varieties, such as Grand Mogul, Pasha of Egypt, Viceroy, Empress, Bishop's Hat, &c., the Serpent Gourd, Gorilla, St. Aignan, Mons. Fould, Siphon, Half-moon, Giant's Punch-bowl, and the Mammoth, which weighs from 170 pounds to upwards of 200 pounds; while, among the miniature varieties, the Fig, Cricket-ball, Thumb, Cherry,

Striped Custard, Hen's-egg, Pear, Bottle, Orange, Plover's-egg, &c., are most interesting kinds, and particularly useful for filling vases, &c. All these, as well as many others, grow well in our climate in summer, and do not require the protection of glass or any other shelter. The directions given for the culture of the Gooseberry Gourd will be found applicable to all the rest; those that are sown in frames early in the season being gradually hardened off by a judicious admission of air before they are finally planted out. This course, however, need only be pursued when an early growth is desired. The plants, as a rule, are tenacious of life, and will exist with a scanty supply of water and in indifferent soil; but, if it is desired to grow them to their highest degree of perfection, they will, like their congeners the Melons and the Cucumbers, be found not insensible to the advantages of a rich and mellow compost, and a liberal allowance of water at all times. These conditions are,

W. M.



The Gooseberry Gourd.

in fact, essential to the abundant production of well-developed, finely-shaped, and richly-coloured fruit.

SAXIFRAGES.

By J. C. NIVEN, Botanic Gardens, Hull.

The None-so-pretty Group (Continued from p. 477).

S. Geum of Linnaeus—though amply distinct from the preceding species, *S. umbrosa*, when seen in its true typical character, possesses also many variations that, in my opinion, may be traced to a strong tendency to hybridisation between the two species, there appears to be a sort of collateral cousinship amongst them, whose limit is so extensive as to form a perfect puzzle to the descriptive botanist. The true specific type under consideration has round reniformly cordate hairy leaves, crenate or dentate as to the margin, and showing but a small trace of the hard cartilaginous edge that we had in the preceding species; the foot-stalks of the leaf are hairy, rounded below, channelled above, and longer than those of *umbrosa*. The whole plant in aspect bears so close a general resemblance to the old London Pride—more especially in the flowers—that they may readily be mistaken by the ordinary observer for the same

plant. Our present species is not, however, possessed of such a vigorous constitution, nor is it able to stand the extremes of cultural neglect, under which, as I before observed, the other appears to flourish. Like *S. umbrosa*, it seems to have no recorded habitats beyond Britain, the Pyrenees, and the central mountains of Spain, but I am strongly of opinion that the remarks I made on the geographical distribution of that species are equally applicable to this.

S. Geum var. *polita* of Haworth is of much smaller and denser growth, devoid of hairs both above and below the leaf, cordate at the base, but not reniform the marginal notches, broad and blunt pointed.

S. Geum var. *dentata* of Link, as its name implies, is specially distinguished by the small sharp serratures, by the foot-stalk being flattened at the top, not channelled, and by the slightest tendency in the orbicular leaf to run down the margin of the petiole; the flowers, besides the usual crimson spots, have a single yellow blotch about the centre of each petal, which enhances their beauty much on a close examination, though hardly noticeable at a distance.

S. Geum var. *elegans* of Mackay has its leaves slightly more oval than orbiculate; its chief characteristic, and on that account the name *elegans* was given by the worthy old Saxifragean Doctor, results from the flowers being densely dotted over with both yellow and crimson spots. It grows abundantly in one or two localities in the south and west of Ireland, but we have no record of this variation occurring on the Continent.

S. Geum var. *hirsuta*.—Considered as a distinct species by Linnæus, and merged into the variety *dentata* by Engler, possesses many features especially its own, sufficient, if not to raise it absolutely to a specific title, at least, to constitute it a well marked variation. It has the true characteristics of our typical species, both in form of leaf and foot-stalks, its leaves are more upright, margined with very blunt crenatures, and covered both above and below with long erect hairs; as to colour, the whole plant is of a much darker green than any of the preceding; and the flowers almost devoid of the crimson dots. This plant, when growing with the vigour as it does in the southern Irish mountains, is supposed, by some, to be allied to *S. repanda*, if not identical with it; but, independent of other botanical points, the thick fleshy leaves of the latter, as compared with the former, renders it readily distinguishable.

S. cochleariæfolia of Schrader is identical, from Engler's description, with a species long in cultivation under, I feel bound to say, a much happier title—namely, *S. cochleata*—than that which Schrader has given; but, for it I can find no authority beyond that of gardens; and, as the other has a true descriptive status, I suppose we must yield here to precedence. Be the name as it may, this is a singular little plant, and perfectly distinct. It forms dense compact tufts of glabrous, rounded, cordate leaves, oblique at the base, hard and horny in substance, and markedly concave; the margins, indented irregularly, are cartilaginous; the flower-stems are about 6 inches high, covered with minute glands, and distinguished by the presence of two or three wedge-shaped leaves. Our plant, as regards foliage, does not exceed 2 inches in height, and always presents a dark bronzy-green appearance, its concave or, as I would term them, cochleate leaves, intermingling with the adjacent and opposite leaves, destroys altogether anything in the form of a rosette-like arrangement. What, then, is its history? Referring to Engler, we find it occurring in his hybrid addenda to the *Robertsonia* section, where it is represented as a cross between *Geum* and *rotundifolia*, a parentage that I must candidly admit I entirely fail to recognise on either one side or the other, whether as regards foliage or flowers; which latter, by the way, are very rarely produced. He further states that it is a hybrid found by Villars in his garden as long ago as the year 1793, and having since occurred in the Berlin Botanic Garden. Be this as it may, it has all the distinctive characters of a true species; and, as such, I am disposed to recognise it, and should like to see it retained under its garden title of *S. cochleata*, at least, until some more likely ancestry for it is pointed out.

S. cuneifolia of Linnæus, is sometimes met with under the name of *S. cuneata*, but the latter is given by Willdenow to a plant belonging to the Mossy section; hence, however unfortunately similar the nomenclature may be, the two species are perfectly distinct. The leaves in this plant are glabrous, ovate, with the blade rounded at the apex and gradually narrowing into the petiole in a wedge-like fashion for at least half its length. The margins are distinctly cartilaginous, very slightly notched, collectively the leaves form a tolerably dense arrangement of moderately-sized rosettes, from the centre of each of which rises a panicle of flowers, some 6 or 7 inches high, more slender, and the individual flowers much smaller than in *Geum*. It is a native of nearly all the mountain ranges in Southern Europe.

S. cuneifolia var. *daurica* of Schlicher, although regarded as synonymous with the foregoing, is, I think, fully entitled to rank as

a distinct variety, arising from the following peculiarities. Its leaves are more acutely pointed, the apex being distinctly reflexed, and the margins more irregularly notched; added to these, the arrangements of the rosettes is far from being so uniform. Some rise above the general surface, giving a much laxer character to the growth of the variety than is the case in the original species.

S. cuneifolia var. *infundibulum*.—Of this name no mention whatever is made by Engler, and yet it is an exceedingly distinct variety. The funnel-shaped Saxifrage has its leaves almost entire in the margins, round at the points, and incurved in such a manner that each rosette forms a perfectly natural foliated cup, from the centre of which rises the panicle of flowers about 4 or 5 inches high; indeed, I know of nothing more striking than the effect produced in a well-grown plant of this variety, each rosette being a facsimile of its neighbour. In cultivation the most appropriate position in a rockery for both this and the former varieties is when growing in a decayed old stump of a tree, thus raising it above the general ground level, and giving it an opportunity to overhang the edge, which it will soon do, with a degree of grace and elegance that few plants can surpass. I originally obtained it from the Copenhagen Botanic Garden, and, though not absolutely certain, I think it is one of Dr. Lange's very appropriate names.

S. cuneifolia var. *multicaulis* of Lange.—This, like the former, is tabulated as a synonyme, but is equally entitled with it to be considered as a variation, if not indeed a true species. Its leaves are slender, much narrower than the foregoing, and it branches off into numerous trailing stems, not distinct rosettes; it is but a shy grower. I had it in cultivation for about three years from seed, and, just as it was going to bloom, it succumbed to an attack of that pest of all pests—the white grub of the *Otiorynchus*; should any of my readers possess this variety I should be only too glad to add it once again to our collection.

S. capillipes of Reichenbach has been cultivated for years as *S. capillaris*; it is considered by Engler as a variety of *cuneifolia*, to which he gives the name *subintegra*, but I prefer the specific name, to which I think it is fully entitled. It is a perfectly glabrous plant, with rounded leaves, narrowing very slightly into the petiole, entire as to their margins, and of a thick leathery consistency; they are grouped together in wide expanding rosettes, each rosette being supported on a slender woody stem devoid of leaves, hence originates the very appropriate specific name. The flowers are produced somewhat sparsely, and are, individually, much larger than in any of the heretofore named varieties of *cuneifolia*. It is a native of the Apennines, the Alps, and the Tyrol. It is a free-growing species, flourishes well in common garden soil, and, being of a pretty lively green, has a pleasing and effective appearance as a border or rock plant, independent altogether of the bloom.

S. Bucklandi of gardens.—As long as I can remember, this species has been in cultivation in our English gardens, and I have no doubt those who grow it will admit that it ought to rank as a good distinct species; and yet, not only is the name altogether absent in Engler's "Monograph," but there is no species described therein, that, so far as I can make out, can be applicable to our present plant. *S. Bucklandi* is a dense-growing caespitose plant, composed of numerous small rosettes, whose erect foliage and compact arrangement cause the little rosettes to merge into one another, in such a way that they almost lose their individuality. The leaves are small and ovate, gradually narrowing down into a long slightly-ciliated petiole; the upper surface of each leaf is distinctly convex, and the margins almost entire. The tiny panicles of bloom rise to a height of about 3 inches, and produced, as they are in quantities, have a very pretty appearance, adding elegance to the somewhat stiff contour of the tufted little plant.

SNAPDRAGONS.

THESE may be had in flower all through the summer and autumn months, and among the blossoms are forms and markings of the most varied and beautiful kind. Snapdragons are best when treated as hardy biennials. A pinch of good seed sown in a box or pan in a house or frame during the month of March will furnish abundance of plants for any ordinary garden; and when these seedlings are 3 or 4 inches in height they may be placed in the box or pan in which they are growing in the open air until the stems have become hard and wiry; then transplant them into whatever position they are to occupy; and by midsummer, or soon after, they will begin to bloom, and will continue to do so until the end of November. As a rule I find that no other hardy border plant flowers more continuously or more freely than the Snapdragon, and those side shoots that come so abundantly after

the centre spike has done blooming offer most useful material for cut bloom at a time when flowers are of great value. If seed be sown as soon as the earliest pods are ripe, which will be about the end of June on old plants, a batch of seedlings should be raised from it sufficiently strong to stand the winter, and these will flower early in the ensuing summer. The best plants and the finest spikes are produced from those plants that have bloomed the previous autumn, as, if the tops have been partially cut down during the winter, an abundance of strong, robust growth will come up early in the spring from the base of the plant, and these shoots will furnish splendid spikes of flower, varying from 6 to 9 inches in length, all open at once. These would be at their best probably about the middle of June; but if a goodly number of plants be grown there would be little difficulty in getting good spikes for exhibition all through the month. The Snapdragon is a very easily cultivated plant, and, if horticultural societies could be generally induced to encourage its culture by offering good prizes for the best eight or twelve spikes, it would doubtless receive more general attention than it does at present. The most pleasing forms of the Snapdragon are those with flaked and striped flowers, and these come very constant from seed. It is peculiarly noticeable that seedling plants of this striped strain have stripes or flakes on the under sides of the leaves, and the stems are also sometimes marked in the same way. The flower markings are so diversified, that out of a batch of 100 plants scarcely two have flowers exactly alike. Many of them are also bizarre in character, having a coloured ground, and two other diverse colours flaked upon it. In securing a collection for any purpose, it would, however, be unwise to overlook the beauty of some of the self-coloured flowers, or those that have white throats with rich coloured mouths, and especially those that have deep coloured mouths and orange or white lips. Most of these colours are found best in the tall-growing strain; and, as these, when in the second year of growth, will rise to a height of 30 inches, they should be planted several feet from the front of the border, in order that dwarf plants be not obscured. There is a dwarf or Tom Thumb strain that is perhaps best adapted for pot culture. These will grow to heights varying from 10 to 15 inches when in flower, and, in addition to a very free blooming habit, have colours that do not exist amongst the tall kinds. This dwarf strain is just as hardy as the other, and requires the same process of cultivation; but, if planted in the open border, it should be kept in the front row with other medium-sized plants. If seed of these be sown in the spring under glass, plants will be produced that will flower during August and September; and if potted up into 32-sized pots will make a rare display in windows at that time. There are a few very fine double forms of Snapdragon, but these do not seed, and have to be propagated by cuttings. The flowers are very large and massive, and have a curious appearance, but are not, on the whole, so pretty as the single kinds. It is always easy for the grower to perpetuate any favourite kind by means of cuttings, which should be taken from strong side shoots in the summer, and struck under a hand-light in some shady or cool situation.

A. D.

WELSH WILD FLOWERS.

It was after seeing the wild Columbine in a meadow close to the steep rock, known as the "Little Orme's Head," near Llandudno, that I came to the conclusion that old Walton's Culver Keys, the flower about which so many different opinions have been expressed, must have been the *Aquilegia vulgaris*, since it grows wild in sufficient profusion here to enable "garlands" to be formed of it "along with Cowslips." Those who assert, in confirmation of their opinion, that the wild Columbine could not have been the plant alluded to by the old angler, because it is never seen in sufficient quantities to form a garland, should go to Llandudno, and interview it there when in full bloom. The Vernal Sandwort I, likewise, found there, its pearly-white flowers showing out well amid the bare herbage on the mountain's side, and the *Herbe aux Charpentiers* of the French, the Herb of Taliesin, as it is called in North Wales, being named after that ancient bard, thrives better there than in any other place in which I have ever met with it, Bangor included, and yet I gathered some fine specimens of it near the latter town, two summers ago, but those taken from the Little Orme were the best. "Pegyl," as the

Welsh women call the Hound's-tongue, is very abundant in the hedges; its lurid look betrays at once its poisonous character; nevertheless, it is, in my opinion, an interesting plant, and its prickly nuts, and smooth seeds, are very pretty objects when viewed through a common microscope. The little Orme cannot boast like the large rock, the Great Orme, of rare shrubs, such as the *Cotoneaster*, which guide books tell one used to be considered a foreign plant, until found there. I see no reason, however, why it should not still be thought so, though very hardy; for, anyone acquainted with that coast must be aware that, in former years wrecks off the Great Orme's Head were unfortunately not unfrequent; what more likely, then, than that the seed collection of some homeward-bound botanist may have been cast on shore to take root among the crevices of that dangerous rock? The botanist, who stays at Llandudno should visit Sychant Pass, a spot rich in rare wild plants, where, among the old Druidical remains he will find much to delight him. Maen y Campan (the stone of games), the place where Eisteddfodai were held, the Cromlechs and the Carneds are all covered with different kinds of flowers, and even the old walls of Braich y Ddinas, the strongest fortress the Britons ever held in the Snowdon range, are decked with graceful Ferns, Ivy, and yellow Wallflower, whilst the lovely little Maiden Pink (*Dianthus deltoides*) covers the ground with its bright tufts of bloom, but the raven and the chough now reign where the old Welsh Princes waged war against their Saxon foes, and oft-times against each other. The Great Hall, at Conway Castle, where Edward and his nobles held high revel, is given over to the fronds of the Hart's-tongue and memories of the mighty dead. The name of Llewelyn y Llwy Olaf has almost faded from the land he reigned over, but the descendants of the birds he loved so well to sport with, the royal peregrine and the falcon, may still be seen hovering over the mountain passes, or wending their flight across to the Orme's Head.

Berry Grove, Liss.

H. E. W.

GRAPE HYACINTHS.

(MUSCARI.)

THE increasing interest taken in all classes of hardy spring-flowering plants will, probably, make a complete account of this pretty family acceptable to cultivators of these subjects.

Muscari moschatum.—This, the musk-scented Grape Hyacinth, is more remarkable for the fragrant odour than for the colour of its flowers, which are of a dull greenish-yellow tint, slightly shaded with violet, and are produced, in rather dense racemes, 2 or 3 inches long, and containing from twenty to fifty flowers on flower-stalks 4 to 8 inches high, appearing in spring and early summer. The individual flowers are about a quarter of an inch long, and of a tubular pitcher-shape, with the rounded segments of the mouth reflexed in a starlike fashion; leaves, five or six in number, linear, fleshy, about a foot long, and from half-an-inch to three-quarters broad. Native of Asia Minor and the East. A variety, *M. m. flavum*, has yellowish flowers, with purple teeth or segments, disposed in a more oblong raceme.

M. comosum.—Flower-stem, a foot or more high, marked with tawny spots; flowers, of an olive-tinged amethyst blue, or bluish-violet, arranged in a large loose raceme, 6 to 12 inches long, and containing from forty to a hundred flowers, each flower is divided into slender twisted segments, which give it a fringed appearance, most remarkable in the varieties, *M. c. monstrosus* and *M. c. plumosum*; leaves, linear, ribbon-like, channelled, toothed at the edges. Native of Southern Europe and Algeria. A variety, *M. tenuiflorum*, has narrower flowers and leaves. *M. clusianum* is also, probably, a variety with fewer and denser abortive flowers.

M. racemosum.—A well-known kind, very common in old gardens; flower-stem, 4 to 6 inches high; flowers, fragrant, of a deep sky-blue colour, in a dense raceme of twelve to twenty blooms, and about an inch long; leaves, five or six in number, rush-like, speaking 8 to 10 inches long. Native of England and Southern and Central Europe. A variety (*M. pulchellum*), found on Mount Parnassus, has leaves which are less rush-like in appearance, and has larger and more reflexed segments of the flowers. Another, *M. byzantinum*, has a lax few-flowered raceme and erect leaves.

M. botryoides.—A very charming species, with a flower-stem 6 to 9 inches high, and lovely deep sky-blue flowers, with white teeth or segments at the mouth, arranged in a short, dense, and almost globose raceme, 1 to 1½ inches long, and containing from twelve to twenty flowers; leaves, three or four in number, linear, somewhat glaucous, 6 to 12 inches long. Native of Southern Europe. A variety (*M. b. Lelievrii*), found in Western France, has a denser raceme and thicker flowers. It also blooms earlier (about the end of February) in its native habitats.

M. alpinum.—Flower-stem, 1½ to 2 inches high; flowers, sky-blue, in somewhat loose racemes 1 to 1½ inches long, and contain-

ing from twelve to twenty flowers each; leaves, four or five in number, linear, fleshy, 2 or 3 inches long and about a quarter of an inch broad. Native of Asia Minor, in the Alpine districts of Cilicia and Taurus.

M. Cupanianum.—A Sicilian species, with broadly-linear, flaccid, channelled leaves, and flowers disposed in a longish dense raceme.

M. caucasicum.—Flower-stem, 6 to 8 inches high; flowers, of a livid blue, in a loose raceme from 3 to 4 inches long, and containing from twenty to forty blooms; leaves, two to four in number, fleshy, linear, 6 to 9 inches long and about half an inch broad. Native of arid parts of the Georgian Caucasus.

M. Bootanense.—Flower-stems, 5 or 6 inches high; flowers, blue, twelve to twenty in number, borne in a raceme 2 to 2½ inches long and 1 to 1½ inches broad; leaves, five or six in number, fleshy, linear, very convex on the back, 5 or 6 inches long and about a quarter of an inch broad. Native of Bootan.

M. Pinardi.—Flower-stem, 6 to 8 inches high; flowers, in a loose raceme of from fifty to eighty blooms and 4 to 8 inches long; leaves, four to six in number, 6 to 9 inches long, and about a quarter of an inch broad. Native of Asia Minor.

M. longipes.—This species resembles *Hyacinthus ciliatus* in habit, but retains the distinguishing flowers of its genus. They are produced in a pyramidal raceme, the pedicels of the lower flowers being often 2 inches long. Leaves, linear, roughly-toothed, shorter than the flower-stem. Recorded by Boissier as a native of Philistia.

M. Gussonii.—Flower-stem, 3 or 4 inches high; flowers, in a rather loose raceme of twenty to thirty blooms, and from 2 to 2½ inches long; leaves, three or four in number, linear thread-like, and 5 or 6 inches long. Native of Sicily.

M. latifolium.—This species is distinguished by never producing more than a single leaf, which is 9 to 12 inches long and from three-quarters to an inch broad; flower-stem, slender, a foot or more high; flowers, in a moderately dense raceme of twenty to thirty blooms, and from 1½ to 2 inches long. Native of Phrygia in the Pine forests of Mount Mourad-Dagh.

M. Bourgei.—Flower-stem, 1½ to 2 inches high; flowers, of a deep sky-blue colour, in a short loose raceme of six to ten blooms, and from half to three-quarters of an inch long. Native of Lycia, near the snow-line on Mount Ak-dagh.

M. maritimum.—Flower-stem, 3 to 6 inches high; flowers, in a loose raceme of twelve to twenty blooms, and from 2 to 2½ inches in length; leaves, three or four in number, fleshy, linear, 6 to 9 inches long, and about a quarter of an inch broad. Native of Algeria.

M. neglectum.—Flower-stem, 6 to 9 inches high; flowers, fragrant, of a deep sky-blue colour, with whitish reflexed segments at the mouth, and arranged in a dense raceme, 1½ to 2 inches long, and containing from thirty to forty flowers; leaves, numerous 9 to 12 inches long, linear thread-like, deeply channelled. Native of France, Germany, and Italy. This appears to be little more than a larger-growing variety of the preceding species.

M. commutatum.—Nearly allied to *M. racemosum*; flower-stem, about 6 inches high; flowers, of a deep sky-blue colour, almost scentless, in a dense raceme of twelve to twenty blooms; leaves, five or six in number, fleshy, narrowly linear, channelled, 5 or 6 inches long. Native of Southern Europe, Palestine and Armenia. *Botryanthus albo-virens* of Todaro is probably a white-flowered variety of this species.

M. grandifolium.—Flower-stem, 5 or 6 inches high; flowers, of a livid blue colour, in a dense raceme of fifteen to twenty blooms, and about 1½ inches in length; leaves, five or six in number, 15 to 18 inches long, and about 1½ inches broad. A large-leaved species; grown in the Royal Gardens at Kew. Native country unknown.

M. Aucheri.—Flower-stem, slender, 2 to 4 inches high; flowers, very small (scarcely half an inch long), in a short dense spike of six to ten blooms; leaves, two in number, fleshy, 2 or 3 inches long. Native of Asia Minor.

M. pallens.—Flower-stem, 3 to 5 inches high; flowers, white, oblong, less pitcher-shaped than those of any other species, in a dense raceme of twelve to twenty blooms, and less than an inch long; leaves, numerous, thread-like, 6 to 8 inches long, glaucous, rounded on the back. Native of the Caucasus and Iberia.

M. parviflorum.—Flower-stem, slender, thread-like, flexuose, 4 to 8 inches high; flowers, of a pale sky-blue colour, very small, six to twelve in number, produced in a loose raceme of six to twelve blooms, and from ¾ to 1½ inches long; leaves, six to eight in number, linear, thread-like, 4 or 5 inches long. Native of Spain, Sicily, Algeria, Egypt, and Syria.

M. Heldreichii.—Flower-stem, 4 to 6 inches high; flowers, of a fine amethyst-blue colour, somewhat like those of *M. botryoides*, but nearly twice as large, and arranged in a longer spike. Leaves,

five or six in number, rush-like, 8 to 12 inches long. Native of Mount Parnassus, in Greece.

The preceding account, translated from Mr. Baker's Latin descriptions in the *Journal of the Linnean Society*, includes all the known species of *Muscari*, only some of which, however, are in cultivation; several kinds, as may be seen from the descriptions, presenting no features of marked interest. The kinds which are grown are valuable as distinct and pretty plants, flowering in spring and early summer. Their proper position is either in the front row of the choice border or on rock-work, or they may be advantageously grown as window-plants in pots or boxes. In all cases, they thrive best in rich, deep, sandy loam, and are easily multiplied by separation of the bulbs every third or fourth year. W. M.

Deep Planting best for *Primula farinosa*.—This grows in my neighbourhood, and I have for years had specimens of it in my garden. I procured them in April; and, in the following June and the succeeding season, the flowering was usually satisfactory; but, after that, I generally lost them—they did not reappear after the second winter. Attributing the failure to frost forcing the roots out of the ground when deprived of their mossy covering, I adopted the following mode of culture, which has proved successful:—About the middle of August I replanted all, dividing the strongest; and, after stirring the soil and adding a little fresh material, I took each plant, and grasping it around outside the outer leaves, and so enclosing the inner ones, pressed them together and inserted the plant so deep as to leave only the tips of the outer leaves visible above the soil, and finished by pressing the latter firmly and compactly all around. Notwithstanding this deep planting, I have, after a severe frost, occasionally observed protruding roots, and had to apply my foot with some degree of pressure to force them back into their places; nevertheless, the result has proved that such rough treatment did not prevent the plants from doing well. These Primroses like a light peaty soil; and, being bog plants, dryness must be avoided when in flower; they require to be watered freely. Thus treated, my plants have increased rapidly and flowered strongly, having stems from 12 to 14 inches high, bearing noble umbels, each consisting of upwards of forty florets. *P. cortusoides* has succeeded equally well under the same treatment, and it is probable that all the *Primulas* of the deciduous section would also succeed.—Rv.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Sideritis hyssopifolia*.**—This is a very quaint-looking, and, I believe, rather an uncommon plant of the labiate family. It grows about 9 inches high; has a dense-spreading habit, a profusion of long spikes of pale yellow or sulphur-coloured flowers. Its low prostrate habit renders it admirably adapted for rock-work, especially when the latter is of a dark colour.—T. WILLIAMS.

Peat-loving Plants.—Can any of your correspondents inform me from experience what is the best kind of bed or frame in which to grow the North American Orchids, Bog plants, and such things as *Pyrolas*, *Trilliums*, and other small and delicate plants of like nature? Is it necessary to use peat alone? and is *Sphagnum* a good thing? It seems that most of these plants like to be kept dryish in winter, and very wet in summer, which is exactly the reverse of what our climate naturally is. How can this be managed?—H. E.

British Ferns in London Areas.—A prominent feature of London areas in summer is the abundance of native Ferns which they often contain, and which appear to thrive amid the dust and smoke almost as well as in the country, a circumstance probably owing to their shady cool position, and to the copious supply of water which they get. I know several streets in the heart of London where they grow year after year as fresh as possible in the areas, and the more shady these are, the better the Ferns do. My principal object in writing, is, however, to draw attention to the rocky Fernery that was added to the South Kensington Museum some years ago. This is now very attractive, the Ferns (most of which are common native species) being fresh and vigorous and not a bit less graceful than their tropical or exotic congeners.—F. W. B.

Alpine Veronicas.—Every lover of plants who possesses a garden ought to grow the following Veronicas, viz:—*V. multifida*, *pectinata*, *repens*, *saxatilis*, *taurica*, and *verbenacea*. They are all perfectly hardy, and require but little attention. *V. repens* is a beautiful plant for the spring garden, and for that purpose cannot be grown too largely. A gentleman passing my garden last spring, when an edging of it was in full bloom, inquired, "what is that plant which is as white as snow?" *V. taurica* is also quite a gem if left undisturbed for a year or two; it is just now blooming beautifully with me. I have also planted a very beautiful variety of *V. saxatilis*, called *Grievei*, a kind with bright rose-coloured flowers, which I received from Messrs. Backhouse, of York. It is worth inquiring after.—J. WHITTAKER, *Morley, near Leeds*.

Flowers for Dry Barren Borders.—I have a border, in front of my house, in which plants generally refuse to grow, as it becomes very dry and parched during the summer months. What could I obtain to cover it, and bear a few flowers?—W. S. [For a border such as you name, nothing is better than *Antirrhinums*, or "Snapdragons," and *Mignonette*. Sow the latter now, and in autumn dig it as deeply as possible, adding a barrow load or two of stable manure, and then sow *Antirrhinum majus* and *Saponaria calabrica* seed thickly all over the surface, and rake them in thoroughly. These are sure to grow and flower well the following summer. A friend of ours lives in a house facing a railway embankment, and, to hide this, he obtained permission to sow flower seeds over it, and just now the *Antirrhinums* are a sight well worth seeing—a perfect mass of brilliant colours.—Ed.]

THE ARBORETUM.

EFFECTS OF GEOLOGICAL POSITION ON CONIFERS.

THE general diffusion of foreign Conifers in this country, and their importance, not only as regards the effect which they will eventually produce in our landscapes, but as regards their intrinsic economic value, induces me to hope that a notice of certain peculiarities, which I have had opportunities of remarking in a few species, may not be unacceptable. In and about Tortworth Park, at the northern extremity of the Bristol Coal Basin, the underlying beds of carboniferous limestone and old red sandstone crop out at a high angle, with occasional beds of the triassic and liassic formations resting on their flanks, producing not only great irregularities of surface, but important differences both in the constitution and quantity of the superincumbent soil. Over the whole of this ground the more common Conifers are planted in great abundance, and, with a few exceptions (owing chiefly, I believe, to geological reasons), they grow rapidly and well. As a general and sufficiently obvious rule, the Conifers thrive in proportion to the depth of the surface-soil on which they stand. This is especially the case with the Deodar and *Pinus insignis*. The rule does not, however, appear to apply invariably to the Douglas Fir (*Abies Douglasii*), as I possess specimens growing as vigorously on the cold and sterile shales of the carboniferous limestone, as others on the deep and warm soil of the old red sandstone. The most fastidious of the Conifers which I have had an opportunity of observing is, undoubtedly, *Cryptomeria japonica*. On the limestone, its leading shoot is always defective, and its growth generally devoted to the formation of a nest-like mass of small shoots; whilst on the old red, a formation deficient in lime, its growth is regular, upright, and graceful, and so rapid, that I have no hesitation in affirming that in this locality it would outgrow the Larch. The Deodar, on the other hand, appears to be the least discriminating, and the most accommodating of all the Conifers. No position, and no variety of soil, appears to come amiss to it; on lime or sandstone, rock or clay, it grows with equal facility—though depth of soil, as before stated, invariably contributes to rapidity of growth. *Pinus insignis* appears to prefer the old red to the limestone; on the latter formation it maintains its health, but its annual growth is comparatively small. The most vigorous specimen of this Pine which I possess stands on a deep loam, formed by the detrital matter of the overhanging hill, at the point of contact of the old red sandstone and the clay of the lower lias. In *Arancaria imbricata*, though planted in considerable abundance, and in every variety of soil, I have not been able to detect any decided preference for one formation over another. It has an evident dislike to a wet locality, and it generally, though not exclusively, thrives best upon a deep soil. *Cupressus funebris* and *Cupressus Goveniana*, are both growing vigorously on limestone rock, with but little surface soil. The former of these trees is thriving equally upon a deep soil of the old red sandstone. *Cupressus macrocarpa* is growing rapidly on the clay of the carboniferous limestone. *Taxodium sempervirens* appears to be extremely capricious in its taste as regards the formation on which it grows; but I have, in several cases, remarked that it thrives and even appears to luxuriate in a shade which proves deleterious, and often fatal, to *Pinus insignis*. There are many other Conifers which appear to manifest habits or tastes peculiar to themselves; but which are either too young, or in numbers insufficient to justify me in attempting to generalise upon them. Indeed, all the remarks which I venture to offer in this short paper are not made with a view to dogmatise upon the subject, but in order to call the attention of persons cultivating this tribe of plants to the importance of selecting the position of such Conifers as show any decided tastes. With some reference to geological position, it is true that many formations are not often met with upon one estate, more especially in one park—the locality in which the more valuable

Conifers are generally planted; but, where such conditions do occur, a knowledge of the formation in which each species appears to thrive best cannot fail to prove important. Before such knowledge can be attained, more extended and more accurate observations will, however, be necessary. [Let us hope that this paper, contributed to the transactions of the Scottish Arboricultural Society, by Lord Ducie, may prove the means of calling general attention to this matter.—Ed.]

ROSY-FLOWERED ELDER.

(*SAMBUCUS ROSEIFLORA*.)



The Rosy-flowered Elder (*Sambucus roseiflora*).

THIS very ornamental variety of the Elder is a seedling from *S. glauca*, to which, however, it does not bear the slightest resemblance. It forms a vigorous-growing shrub, with smooth shoots and branches, and oval-acuminate leaves, green and smooth on the upper surface, and covered with a silvery-white and felted down underneath. The shoots are covered with a green bark, marked with one or two reddish rings at the insertion of each pair of leaves, the rachis of each leaf being generally tinged with violet. The flowers are rose-coloured on the outside of the petals, and white on the inside. They are almost scentless, and are disposed in comparatively short spike-like clusters, broad at the base, and with numerous violet-coloured ramifications. The plant does not run at all at the roots. The parent plant, *S. glauca*, on the contrary, has all its herbaceous parts covered with a dense pubescence, and bears yellow flowers, which have an odour of Citron or Gilly-flower, and are produced continuously, disposed in an umbel. The leaves are different in size and shape from those of *S. roseiflora*, and are pubescent on both sides. The plant also runs very much at the root. Our illustration represents the inflorescence of this remarkable variety, which, in almost every particular, presents a singular contrast and want of resemblance to its parent, and which might, with great advantage, be introduced into our pleasure-grounds among Lilacs, Laburnums, and other flowering shrubs. It is perfectly hardy, in different as to soil, but, of

course, will thrive best in a generous loam. In other respects it requires as little attention as the common Elder of our hedges.

W. M.

Extent of Woods in England.—It seems from the official statistics that of the whole surface of England and Wales, less than 4 per cent., or only 1,453,000 acres out of a total of 37,319,000 acres, is occupied by woods, coppices, and plantations. Treating the three ridings of Yorkshire as separate counties, Sussex is the only county which returns more than 100,000 acres of wood, nearly 11 per cent. of its area being thus clothed. The woods of Hampshire are next in magnitude, embracing some 87,000 acres, but forming only 8 per cent. of that county's area. Kent follows with 78,000 acres of woodland, while the adjoining county of Surrey, although returning only some 48,000 acres of wood, shows almost as high a percentage as its neighbour Sussex, since very nearly one-tenth of its whole area is thus employed. These four counties, Hampshire, Kent, Surrey, and Sussex, appear to possess a much larger extent of woodland relatively to their size, than any other area in England.

A good Weeping Poplar.—Poplars of late years are receiving attention, and already our list of weeping varieties numbers four or five distinct kinds. According to our idea of beauty, however, there is but one really first-class tree, and that one is among the finest of all the drooping plants; we allude to the *P. grandidentata pendula*.

For a small-sized specimen, it forms a strong rival to the Kilmarnock Willow, and will, we believe, in time supersede it. There is an objection, however, to its culture, which we must mention: all the Poplar family throw up suckers, more or less; consequently, this trouble will stand in the way of its advancement. Budded upon the Lombardy Poplar, the long, slender branches, reminding one of whips, are full of grace and beauty; and, even when worked 7 or 8 feet high, the branches will extend frequently to the ground in a single season.—*Horticulturist*.

THE GARDEN IN THE HOUSE.

VASE OF SIMPLE FLOWERS.

Just at the present season there are so many flowers in bloom that, when about to decorate a vase, one is puzzled as to what should be selected for that purpose. Being about to redecorate a stand for the centre of a dinner-table a few days ago, I thought I would try what effect I could produce with simple—I might almost say common—flowers. I therefore selected the following, viz., white Water Lilies, wild Convolvulus, Canterbury Bells, Forget-me-nots, and the pink Geranium Christine, together with the addition of a few hardy Ferns and wild Grasses. My stand was a high glass trumpet, which I set in a soup plate, and then filled it with fresh-looking wood Moss, well damped, so as to keep the flowers about to have their stems placed in it fresh. I then commenced to arrange my flowers as follows:—Round the edge I placed some fronds of the Lady Fern (*Athyrium Filix-fœmina*) so as to hide the china; I then filled up the interior with four large fully-opened Water Lilies, trusses of pink Geranium between each, and, close to the stem of the trumpet I placed Canterbury Bells, bent a little forward, so as to hang out; the whole being intermixed with fronds of *Asplenium Adiantum-nigrum*, *A. Trichomanes*, and sprays of Oats. In the trumpet I placed, first, a long spray in flower of *Convolvulus*, which I twined round the stem; this flower is generally considered to be worthless in floral arrangements, because it soon fades, but this is a mistake, for, if placed in water as soon as cut, and not allowed to once flag, it will remain fresh for three or four days. Its young flower-buds will also open equally well as if still growing. After the *Convolvulus* had been twined to my liking, I then finished off the trumpet with a plume of wild Grasses, through which were interspersed some pink Geraniums, of the same variety as that used in the tazza, and a few sprays of white Forget-me-not. Round the mouth of the trumpet were a few fronds of *Asplenium Trichomanes*, wired so as to droop gracefully over. Grouped round this centre-piece I had eight specimen glasses, four about 8 inches high, and four about 6 inches, placed in such a way that the tallest were towards the top, and bottom, and sides of the table, and the smaller came in corner-ways. The tiny bouquets in the four tallest matched, as did also those in the smaller glasses. Each little bouquet in the tall glasses consisted of a half-open pink Cabbage Rose-bud, some white Forget-me-nots, blue Lobelia, Hemlock, hardy Fern fronds, and a few spikes of wild Grasses. Those in the smaller glasses consisted of a half-opened bud of the old white Provence Rose, blue Lobelia, Hemlock, and two pips of pink Geranium. When finished, the effect of this group was really very neat and pretty, far more so than I even for a moment expected; and yet, of what was it composed? Of nothing but common flowers, and what may be termed a few weeds. I do not wish it to be inferred, however, that I consider such an arrangement as this superior to one composed of hot-house flowers. What I wish to inculcate is, that people who may not have stoves and greenhouses may, nevertheless, have pretty floral arrangements on their dinner-tables; and that a few flowers, arranged as has just been described, give a dinner-table a look of refinement such as nothing else can do.

A. HASSARD.

Upper Norwood.

Monanthes ariostaphis. This is one of the most desirable of scandent succulents; it has opposite leaves about the size of, and nearly as thick as those of "Horse Beans." It grows freely in a light moist sandy compost, and if planted in a hanging-basket or pot, it droops very gracefully over the sides. It is easily propagated either by means of cuttings or division, and well deserves general culture as a window plant.—B.

THE FRUIT GARDEN.

THE BEST VARIETIES OF PINE APPLE.

THE varieties of the Pine Apple, though not so numerous as those of some other fruits, are yet sufficiently so to perplex those who contemplate their cultivation, and wish to grow only the best kinds. Out of some two dozen varieties, the following are, in my opinion, the most meritorious:

SMOOTH-LEAVED CAYENNE.—This is certainly, in every respect, the finest variety of Pine Apple in cultivation. It is a robust, compact, free grower. The leaves are quite smooth, of a dark green colour, and covered, on the underside, with a whitish powdery bloom. This is never found on sickly plants, and is always a sure indication of good health. There are two varieties of Smooth Cayenne, one with fine, broad, recurving leaves, which is decidedly the best; the other is much more narrow and erect in the leaf, and never looks so well as that just mentioned. It is one of the most reluctant to produce suckers, about which there is this peculiarity, that they never show themselves until after the fruit appears. It seldom starts prematurely, and is always certain of showing fruit when the plant is about ten months old or so. The average weight of the fruit is from 5 to 8 pounds, and its flavour, in winter and in summer, is nearly uniform, and always excellent. It swells well at all seasons, is very firm in flesh and skin, and will keep well in a cool room for at least six weeks after it is ripe. The Smooth Cayenne yields, as has been already stated, the heaviest weight of fruit from a given number of plants, and it is altogether a very excellent Pine.

PRICKLY CAYENNE.—This is sometimes taken for Charlotte Rothschild. It is, however, inferior to that variety, as well as to the smooth-leaved kind, but is, nevertheless, a fair average Pine. The leaves are narrow, tinted with purple, somewhat erect, and prickly along the margins. It is a sure fruiter, the average weight being 7 and 8 pounds. The fruit begins to colour at the bottom while the top is quite green, and, by the time the top is ripe, the bottom has frequently begun to rot. This generally occurs when too much water is given at the root. Under all circumstances this Pine must be used immediately it is ripe.

CHARLOTTE ROTHSCHILD.—This is a valuable Pine. It grows large, and requires plenty of room for development. The leaves are of a lively pale green colour, long, recurving, and thickly edged with strong spines. It is not such a free grower and fruiter as the Smooth Cayenne, but the fruit is quite equal to that variety in flavour, either in summer or winter, and it often swells to the handsome weight of 10 pounds. Like the Smooth Cayenne, it seldom throws gills from the fruit stem, and it is slow in producing suckers, a circumstance which accounts for its comparative scarceness in the country. It should be in every collection.

THE QUEEN.—This, though an old and common variety, cannot be cultivated by the unexperienced with much success. It is indeed, the most capricious and deceptive of all Pines. Though of the same age as other kinds and treated precisely like them, and though growing along with them, and as large and like to bear fruit as any of them, yet, it frequently does not do so for twelve months afterwards. Sometimes small plants will start into fruit unaccountably and prematurely; often large fruitful-like plants cannot possibly be induced to fruit, while others in all respects similar, not only produce fruit freely but every sucker on the plants shows fruit also. Rarely, even with the best of growers, does a full batch of Queens start into fruit together, nor within months of each other; half the quantity desired is often all that is obtained. I have seen plants of this variety attain a height of 5 feet. These certainly looked quite capable of bearing fruit long before they had acquired such stately dimensions, but they did not fruit until they were four years old. To induce fructification and keep the plants within bounds, decapitation is often resorted to in the case of the Queen, but seldom with any other variety. This operation consists in cutting over the plant by the surface of the soil, clearing off a few of the bottom leaves, as in the case of suckers, re-potting in fresh soil, and plunging in a strong bottom heat, where new roots are soon produced and fruitfulness is generally immediately the

result. The Queen is a moderately robust grower. The leaves are half erect, with rough spiny edges, and the fruit averages from 3 to 6 pounds in weight. In summer the flavour of a good Queen is first class, but in winter it is only about fourth rate. Suckers are produced very abundantly (as well as numerous gills) from the base of the fruit and along the fruit, stem; it is, therefore, easily propagated, but, as regards merit, I give all the preceding preference to it.

BLACK JAMAICA.—This is sometimes grown under the name of Montserrat. Its leaves are long and upright, and very dark green when ripe. The fruit is deep yellow, small, compact, and weighs heavy for its size. Its flavour at all times is exquisite, which is its principal recommendation. It is not often grown in quantity, except about Manchester and throughout Lancashire, where it is extensively cultivated, and seems to be a general favourite.

PRINCE ALBERT.—This is as yet a comparatively scarce Pine. In habit it somewhat resembles the Jamaica, and is a very fine variety. Its leaves are purplish-green, with strong spines. In shape, its fruit differs from the barrel form of the preceding in being pyramidal from the base, which is very broad; it tapers to the apex, is generally a foot in length, and from 4 to 6 pounds in weight. The crown is only about 2 inches high; it cannot be induced to grow large, and, although it would look out of place on the broad shoulders of a 6-pound Smooth Cayenne, it forms a becoming finish to fruit of its own kind. When young, the fruit is dark purple, changing, when ripe, to a beautiful reddish-yellow, and the flavour is at all seasons excellent. It is the handsomest of all Pines, and, as suckers are produced from it freely, I hope soon to see it as common as the Smooth Cayenne.

LAMBTON CASTLE SEEDLING.—This, when in commerce, will be a valuable addition to our stock of Pines. It is a strong grower, with very long dark green leaves, and fruits freely, if needs be, when the plants are small and young, which is a matter of great importance where quick returns are looked for. It surpasses all others in size and weight of fruit, average examples of which weigh from 10 to 12 pounds each. As seen growing in quantity with Mr. Hunter, at Lambton Castle, its appearance is all that can be desired. I cannot speak personally as to its flavour, but in "Fruit Culture Under Glass" it is said to be "exceedingly juicy and well flavoured." This, in the case of a fruit double the average weight of that of any other Pine, is a great gain. Others, such as Enville, Wortley's West Indian, Blood Red, Downton, Havannah, Black Prince, The King, Globe, Hurst House Seedling, Prickly and White Providence, Moscow, Thorsby, and several kinds of Queens might be enumerated; but these possess no particular merit, and are scarcely worth growing, even for the sake of variety. J. MUIR.

Effect of the Late Rains on Fruits and Vegetables in Devonshire.—We have had fine rains here this week, which have been beneficial to Grass, Corn, and Mangold crops, and for Turnip sowing. Potatoes, I have observed, have been small so far, but pretty good for eating, though they have shown symptoms of disease generally, both in stalk and foliage, and a good many of the tubers, when cooked, have been soft, white, and watery. As regards fruits, the Apple crop, after passing through all the vicissitudes of cold, hail storms, frosty mornings, and a long duration of cold biting north-east winds, is much better than was expected; there are some Apples in almost every orchard, some of which are producing a heavy crop. Taken altogether, there is more than half a crop which is now growing fast. Cherries have been pretty plentiful, but generally small, and a good many not much more than skin and stone; while, owing to the long continuance of drought, the natural food for birds got so scarce, that they devoured an immense quantity of them, more particularly the starlings and jackdaws.—JAMES BARNES, *Exmouth*.

Strawberries on the Pacific Coast.—The San Francisco papers state that the receipts of Strawberries in that city for a week or more, towards the end of May, had averaged over thirty tons daily. The greater portion of this immense quantity comes from Santa Clara county, large tracts of land in the vicinity of San Jose being devoted to the cultivation of this fruit. It is transported to the city in chests of twelve to twenty drawers. Each drawer of the twelve contains 6 lbs., and of the twenty 4 lbs. each. On May 28 chests sold at from 2 dols. 50c. to 4 dols. at the commission-houses,

the lowest price this fruit ever sold for in San Francisco. At retail the choicest varieties could be obtained for 10c. per lb. The *Chronicle* adds:—"Thirty tons of Strawberries is a large quantity; but, until a day or two past they have all been disposed of. After this, however, until the close of the season, it will be almost useless to send inferior kinds to this market, as they were yesterday thrown away. When the choicest varieties bring but 4c. per lb., inferior ones will not pay for handling. The crop is unprecedented; and, while the current prices are barely adequate to pay the cultivator for his labour, they place the fruit within the means of the multitude." The San Francisco region is an excellent one for most kinds of fruit.

The Land of Peaches.—The Delaware Peach-growers' Convention met lately at Dover, in Delaware. The Hale's Early was the finest among specimens shown, and a good crop throughout the peninsula of this variety (the earliest), is expected. They will probably form a very large part of the entire yield for the season. The Troths were also very full; but the Early Yorks did not seem so good. The Old Mixons exhibited only a very small chance for a crop. The Smocks will probably be only tolerably full. The Stump of the World made a poor show, and the Crawford's Late were about on a par with them. The Crawford's Early made a very excellent show. The Reeves Favourites looked very promising, and the Moore's Favourites here looked well. Mr. Townsend also reported that the crop for the present season would fall very far below that of last year; that, probably, there would be only one-third as many. There were about 1,500,000 baskets last year. A grower representing Smyrna and the country around, reported the prospect for a good crop in that neighbourhood as very uncertain, and a gentleman from Dover thought that the yield from this section would be very thin, in fact, almost a failure. In Kent County, Maryland, a very prolific Peach section, the crop was reported a failure. In Sussex County, Delaware, a like report was made, and the same from the lower portion of the Eastern Shore of Maryland. The estimates were then called for and the following were reported by the growers representing the different sections:—From Mount Pleasant, 20,000 baskets; Kirkwood, 10,000; Armstrong's, 35,000; Middletown, 75,000; Townsend, 25,000; Ginns, 2,000; Black Bird, 5,000; Green Spring, 5,000; Clayton, 35,000; Brentford, 10,000; Morton, 25,000; Dover, 20,000; Wyoming, 20,000; Woodside, 5,000; Canterbury, 10,000; Felton, 10,000; Harrington, 5,000; Farmington, 3,000; Greenwood, 2,000; Bridgeville, 10,000; Seaford, 5,000; Laurel, 10,000; Delmar, 2,000; Salisbury, 5,000; Dorchester and Delaware Railroad, 10,000; Junction and Breakwater Railroad, 10,000; Kent County Railroad, 25,000; Maryland and Delaware Railroad, 25,000; making a total estimated shipment by rail of 442,000 baskets. It was also estimated that 158,000 additional would be shipped by water, making a total shipment from the entire Peach country of 600,000 baskets.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Vines in Pots.—At what stage in the growth of Vines in pots should liquid manure be given?—A. [It may be given with advantage after the berries are fairly set, and have begun to swell, but as soon as there is the slightest indication of change in their colour, the supply should be discontinued, or it might injure the flavour of the fruit when ripe.—Ed.]

Watering Pine-apples.—I send you a sample of our Pines. The plant from which the fruit sent was cut was watered copiously up to the last moment; but I must state that our plants have abundance of roots and leaves, both broad and thick, that do not leave any idle moisture about the roots. I submit the specimen for your opinion as to its appearance and flavour.—J. THOMPSON, *Wortley*. [Along with this came a noble Queen Pine, well coloured, and weighing upwards of 4 lbs. As to quality, it was pronounced by one of the best judges of Pines in Covent Garden to be excellent.—Ed.]

Peach Trees Dropping their Buds.—The case related by "G. S." at p. 548, Vol. V., of THE GARDEN is a peculiar one, but I have an impression that if he knew all the particulars, it is probable that the falling of the buds of the particular tree in his orchard house would be found to be due to something else than the imperfect maturation of the wood, which seems to be a matter of guess work. Ill-ripened wood can be detected at a glance. If this is the cause, how comes it that only trees under glass suffer the most? and that out-door Peaches are seldom or never affected at all in that way? The few trees we have here out of doors never ripen their wood more than partially, and yet they never drop a bud, so far as I have ever noticed. In fact, immature buds are the least likely of any to drop, so that the case cited by "G. S." must be explained in another way.—J. S. W.

Packing Strawberries.—Strawberries are the most difficult of all kinds of fruit to pack safely. Wrapping each fruit in a leaf is a good plan, but deft fingers only can perform the operation without bruising the berries. We like to pull them off the plants by the foot-stalk, and to lay them in the box in the same way, simply placing a flaccid Strawberry leaf between the berries. In this way they can be wedged as tightly together as is useful. The boxes should be 2 inches deep, and before packing a thin layer of cotton-wadding should be laid on the bottom, and on this soft Vine-leaves; above the fruit, nothing binds so well as the soft Strawberry leaves before mentioned; and above, layers of cotton or leaves to keep all in their places. It is very important that the Strawberry leaves for packing should be gathered some hours before they are wanted, and allowed to dry and flag in the fruit room: leaves freshly gathered are altogether unsuitable.—*Gardener*.

THE INDOOR GARDEN.

WINTER MIGNONETTE.

Few flowers are more esteemed in winter and early spring than Mignonette. Although it is not a delicate plant, yet it is not generally seen in the perfection to which it might be brought by the simple method of culture which I am about to describe. To flower at or soon after Christmas, the seed should be sown in the beginning of August, in pots of any convenient size. The soil should be good loam, moderately enriched with rotten dung, and kept open by a pretty liberal intermixture with old mortar or lime rubbish. It is essential that the pots be thoroughly drained, and upon the drainage a handful (more or less, according to the size of the pots) of one-year-old pigeon's dung should be placed. After sowing the seed, set the pots where they will not require frequent waterings, too much moisture being extremely injurious to Mignonette; for this reason, therefore, it will be safer to place the pots in a frame or pit, where they may be covered by the lights in rainy weather. As the plants increase in size, they should be gradually thinned, ultimately leaving three or five in each pot. The principal point to be attended to now is judicious watering; by this I mean giving water only when the plants really require water, and then in sufficient quantity to moisten the whole of the soil—not dribbling a few drops over the plants to-day to prevent them from being dry to-morrow—a practice too much followed with plants in pots. Pinch off any premature flowers that may appear, keep the pots free from weeds, and far enough asunder to prevent the plants from being crowded, and when they are removed to winter quarters, set them near the glass in an airy situation. A few of the plants might be placed in an intermediate house, or other situation rather warmer than a greenhouse, to come into bloom a little earlier than the rest. I have recommended the seeds to be sown in pots, which is the method I prefer; but, if more convenient, a sufficient number of self-sown plants might be taken up and potted, only a few extra should be put in to allow for casualties, as the Mignonette transplants badly. The best Mignonette I ever saw was treated in this way; but, as it is not everyone who can procure pigeon's dung, I may add that guano will be found an excellent substitute. This admirable fertiliser must, however, be applied in a liquid state, and not before the pots have become well filled with roots, when a small quantity of guano, given at intervals of a week or so, will increase the vigour of the plants in an extraordinary degree. A second crop might be sown in the beginning of September, and managed in the same manner. Single plants will attain a large size in 6 or 8-inch pots, if the main branches are pegged down as they grow and the flowers are kept pinched off for a time.

G. M.

ECHEVERIAS.

In your issue of June 20 (p. 531, Vol. V.) you have given a long list of Echeverias, in which there are several errors, both as regards nomenclature and description. I shall, therefore, venture to rectify them, and, in taking them as they come, where I make no remarks it may be presumed that the original information is correct. *Echeveria abyssinica* is not an Echeveria, but a *Sempervivum*. *E. agavoides*, of this *E. yuccoides* is a synonym. *E. atropurpurea*, the leaves of this are said to be oval-acute glaucous, but they are canaliculate narrow, 4 to 6 inches long, and not glaucous. *E. bifida*, this is a synonym of *E. stolonifera*; in the remarks on *stolonifera* it is said to require a dry and warm temperature; it is, however, equally as hardy as *E. secunda*, which it much resembles, if kept dwarf, but it will grow from 6 to 12 inches in height. *E. calophana*, is said to be, probably, a garden name for *acutifolia*, a kind to which it bears no resemblance; but it is very nearly related to *E. lurida*, only not so metallic in hue. *E. carinata* is a hybrid between *E. metallica* and some other sort, and is not worth growing. *E. farinulenta* is a garden synonym of *E. farinosa*. *E. globosa*, this is distinct from *E. glauca*, and is the same as exhibited by Messrs. E. G. Henderson under the name of *eximia*; it is a better plant than *glauca*, and has a bluish tint, the leaves are concave. *E. Hookeri*, synonym *Pachyphytum roseum* (Hort.). *E. laxa* is a variety of *E. californica*, but the foliage is not quite so glaucous as in that kind, and it is more depressed. *E. misteca* is the same as *E. nodulosa* (Baker). *E. Pfersdorffii* is *E. stolonifera*. *E. scaphylla*, this is said to form "a stemless well-

furnished rosette of leaves, and to be a good subject for ornamental edgings;" the plant is, in reality, however, a very strong grower, forming a mass of green foliage 1 foot through, and from 12 to 18 in height; therefore, quite unfit for edging purposes. *E. spathulifolia* is *Sedum spathulifolium*, and *E. villosa* is the same as *pubescens*. In the notes on cultivation, vegetable mould and peat is recommended, to be mixed with loam and sand. I have, however, always found that Echeverias dislike peat, they avoid it and delight in loam and a mixture of burnt ballast. When at Mr. Wilson Saunders's we once spoilt our Echeverias through giving them peat, especially *E. farinosa*; but in the compost just named I can treat it as the others, giving it plenty of water. As to propagation, they strike as freely as Pelargoniums; the best plan is to cut the tops off, which are found to make excellent plants; the stems, afterwards, push out shoots freely, except, perhaps, *E. pulverulenta*, which is a dangerous subject; if cut down, it strikes tardily, and the old stem dies.

J. CROUCHER.

Cereus speciosissimus as a Climber.—This is a free-flowering and attractive plant when grown in a pot, but to see it at its best it should be planted out and trained up the sunny wall of a conservatory or warm greenhouse. In the conservatory at Little Dalby Hall, near Melton, the back-wall is completely covered with this showy flowering plant to a height of about 12 feet, and when I saw it, a few days ago, there were two or three hundred flowers either fully expanded or yet to open, while many had already fallen off. In addition to the flowers, the plant is made to serve as a stock for *Phyllocactus Jenkinsonii* and one or two *Epiphyllums*, which promise to succeed well thus treated.

Cape Pelargoniums at Kew.—In the Heath-house at Kew there is now quite an attractive display of these showy plants, many of which, notwithstanding their old-fashioned aspect, deserve a place in the greenhouse or window garden, where, under ordinary treatment, they will bear white, rosy-purple, scarlet, or crimson flowers in profusion. In times gone by Cape Pelargoniums used to make their appearance on our exhibition tables, but now they are seldom or never seen on such occasions. Among those now in bloom at Kew, the following are the most conspicuous, viz.:—*P. selectum*, a free-growing variety with Oak-shaped foliage and trusses of vivid purple flowers; *P. pulverulentum*, a variety having swollen stems and thick deep green leaves, something like *Begonia rosæflora*; its flowers are of a deep velvety maroon, nearly black, each segment being margined with dull yellow; *P. elatum*, a kind with small serrated, oblong, glaucous leaves, set on long slender petioles, and bearing conspicuous flowers an inch across, arranged in loose trusses; the lower segments are white, the upper vivid crimson veined with black; *P. ardens majus*, a showy Oak-leaved variety, having trusses of deep scarlet flowers, the upper segments of which are nearly black and quite velvety in appearance. These Cape kinds, like other Pelargoniums, may be readily propagated by means of cuttings, and they like a fresh open compost consisting chiefly of sandy loam.—F. W. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Ozothamnus glomeratus.—This pretty little composite shrub has long slender branches, bright green oblong or ovate sharp-pointed leaves, and dense glomerate heads of whitish flowers; the latter are most deliciously scented, and the plant is well worth a place planted out either in the cool conservatory or winter garden. It is a native of New Zealand and tolerably hardy.—J. Q. H.

Genista prostrata.—This is just now in beautiful condition; its rich golden Pen-shaped flowers being borne profusely on slender decumbent branches. It does well treated as a pot plant in a cool greenhouse or conservatory, or it may be planted on a sheltered portion of rock-work in the outdoor garden, where its bright blossoms render it very effective.—J. B. Q.

Anthurium Scherzerianum with double spathes.—A small seedling of this fine stove plant in the Orchid-house, at Tweed Vineyard, has produced a double flower, i.e., the first bloom which opened had a double spathe. The spadix was the same as that of single blooms. Other flowers which have since expanded on the same plant are single. The double one may be a monstrosity, yet it indicates the possibility of obtaining a double variety.—M.

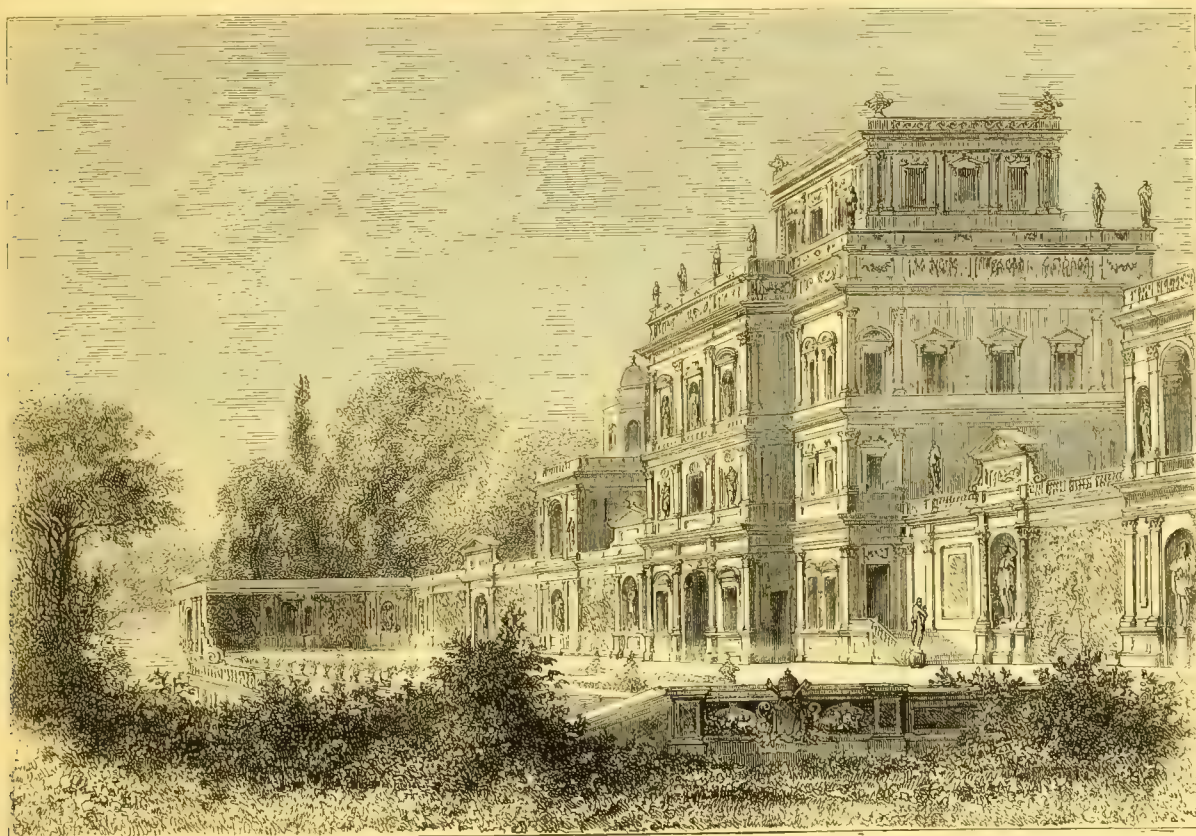
Mimosa prostrata.—This forms an elegant climber or trailer in a cool conservatory. It grows vigorously when planted out in almost any porous compost, and should be trained up columns or pillars and allowed to fall down gracefully from the top; so treated it is very effective, its slender pink shoots being beset rather closely with fresh green pinnate foliage, among which its globular heads of pink flowers are often conspicuous. It is readily propagated by means of cuttings, and seed is borne in abundance on established plants.—B.

Dianella tasmanica.—Dianellas are for the most part pretty blue-flowered Grass-like plants well worth culture in cool greenhouses or conservatories, not only on account of their spreading panicles of coriaceous flowers, but more especially for their bright blue berries which develop themselves after the flowers have faded, and which remain ornamental for several months in succession. They all grow freely, but *D. tasmanica* is one of the best of the group. They grow and blossom well in a fresh compost consisting of loam and leaf-mould, sufficient sand being added to keep the whole in a porous condition. They require a liberal supply of moisture all through the summer months.—B.

FORMALISM AND FOLIAGE.

WE wish to condemn a practice which has been, by some, accepted as a safe one, namely, that of blending palatial architecture with garden scenery, by making those portions of the gardens in close juxtaposition with the architectural lines of the terrace and main building exhibit a formal and geometric character, by the introduction of a preponderance of lines running parallel with those of the structures with which they are closely associated. Even low clipped hedges of ever-green or deciduous shrubs have often been resorted to, in order to give, as it were, more emphasis to the linear effect of this part of a garden. That such a principle is injurious rather than advantageous, is rendered evident in the present instance, by the pleasing effect produced by means of the partial concealment of the architectural lines of the terrace, by the irregular growth of a few judiciously placed shrubs, as shown in the accompanying illustration. The effect thus

shrubs, whose growth does not exceed a moderate height. Forest trees would clearly be out of place so close upon a highly decorative façade, and should be, when in front of such a structure, relegated to a considerable distance, where they would so group with the building, when seen from a stand point still more distant, as to form a pleasingly combined picture, without appearing to intrude upon such an architectural composition—the sky lines and upper part of which are generally intended to be seen, uninterruptedly, from a conveniently near point of view. Such a building may, however, be flanked with the foliage of tall trees with great advantage, which would afford support (as shown) to the general forms and aspects of the building by its dark masses of pleasingly irregular form, and of rich and distinct hues of colour; which not only impart extra value to the light one-toned hue of the building, but blend it into the surrounding scenery with great grandeur and reposefulness of general effect. Clipping of trees



Terrace Garden, with unclipped Vegetation.

realised is undoubtedly good, and shows, beyond the power of cavil, that well planned and artistic interruptions to the continuous formality of architectural lines by the occasional introduction of gracefully-growing shrubs at well considered points, are of the greatest advantage in producing an agreeable variety of form in the general composition; both the regular and the irregular forms gaining greatly by their close juxtaposition. The wild natural grace of the shrubs, whose general growth is of pointed and rising character, being seen to great advantage against the horizontal lines of a light background of stone or marble, while the mouldings of the terrace cornice-work are appreciated with double advantage after their temporary concealment. These advantages would not have been obtained if clipping, and other kinds of formality had been resorted to in the foliage. It should be observed that the foliage near the terrace, which has been made use of in the present instance for the purpose of varying what would otherwise be a monotonous continuity of straight lines, is that of

and shrubs to make them harmonise with architectural forms has for generations been an orthodox practice, but it is none the less a barbarous and needless one. H. N. H.

GARDEN LANDSCAPES AND FLOWERS IN THE WATER-COLOUR EXHIBITIONS.

ONE of the most attractive of the smaller pictures in the present exhibition of the Institute of painters in water-colours, is a spirited study of an old gardener, by Mr. H. B. Roberts. The work has evidently been executed with a rapid and skilful brush, and the result is a free-handed and very artistic production. The expression of that kind of good humoured sagacity which arises from being connected with flowers and fruits, and their culture, is well hit off in this clever sketch; as is also the expression of the honest, perhaps rather self satisfied, conviction that the said flowers and fruits have always been

the finer and the better for his tending. The fine old face is a very index of the seasons, and the weather-wisdom of over three score of years; and a twinkle in the eye, shows plainly enough that the old gardener is brimful of knowingness upon all such horticultural matters as have come within the range of the plodding practice which has been the business, and evidently the very pleasant business, of his life—the successful minding of his master's flower garden, and kitchen garden, and greenhouse too, with possibly a bit of a stove for a few specialities. There is also a quaint puckering about the lips of the weather beaten, but hale and hearty, countenance, which indicates that a supply of good racy garden talk is ready to hand, to any extent, if he should be asked any questions when he takes up to the house the basket of ruddy Apples, nicely trimmed Cabbages, and other esculents which he is carrying under his arm; I commend him to the notice of the always witty and instructive author of the "Six of Spades," and I only wish the original of this capital study, for it must have been done from the life, were going the round with me among the pictures, for the sake of hearing a few of his remarks on flower painting, good or bad, and anent Peaches and Melons and Grapes as they appear on paper or canvas, in this year's exhibition. I fancy he would deem none of the flower or fruit portraiture flattering to the originals, especially if they had been raised by himself, and that he might break out with—"Well, I'd never have sent such a bunch of Grapes as that to a show, or exhibition, or whatever it may be called; and as for the Roses—why, I should have been ashamed of 'em."

Not being able to obtain the assistance of my old garden friend, I must arrive at conclusions in my own way—and am induced to admit to myself that it is not always the most perfect show flower that makes the best model for a picture, nor the most perfect bunch of Grapes that is the one which ought to be painted, for would not every blemished berry on a bunch of Muscat of Alexandria, intended for exhibition, have been carefully snipped out, and the speck of brown or crimson, which in a painted bunch would be of the highest artistic value as a relief to the monotony of the somewhat opaque, glaucous colouring, have been made to disappear. I think I should be able also to show to my friend, the old gardener, that in what may be termed floral landscapes, if by good artists, there is always something new and refreshing to be learnt. For instance, in the picture by Mr. Albert Goodwin in the exhibition of the society of painters in water-colours entitled "The Alpine summer," such vast stretches of flower-colour are shown, as make the patches of blue, red, or yellow in any English garden as yet planted, shrink into pincushion work. In the Alpine summer there are far extending streaks, and broad masses of pink, blue, yellow, orange, and other tones, caused by the profuse flowering of Gentians, Mountain Anemones, Trefoils, Wild Irises, Campanulas, Cyclamens, Trilliums, Orange Lilies, and other flowers, in masses measuring whole acres in extent. Here then, is Nature's method of producing grand effects, upon a large scale, which might be artificially imitated, wherever sufficient space could be devoted to purely decorative purposes. Mr. Goodwin, who evidently feels intensely the beauty of Alpine scenery when rich with its gorgeous tints of spring and summer, has another study of Alp-land, which he calls "The Alpine Rose," in which large spaces, as though vast rosy clouds were resting on the flanks of the great green hills, are encrimsoned by the deep rose colour of *Rhododendron ferrugineum*. The plants grow as thickly together as Heather, and the whole mountain is made glorious by them. Mr. Goodwin, in his enthusiasm, quotes the antique poetry of the Bible to express his admiration:—"The wilderness, and the solitary place shall be glad with them."* That something of the kind might be produced in English park and garden scenery is proved by the existence, in England, of similar effects in places where, however, they are rarely seen, and where they do not minister to the interest and beauty of landscape gardening, or to that of broadly-treated park effects. I know, for instance, many woods which, in April, are so closely carpeted with a profuse and closely-grown crop of wild blue Hyacinths that Nature's flooring is one continuous mass of blue. I also know many meadows, even in the metropolitan counties, where, in early spring, acres of the wild single Daffodil

cover great expanses with soft pale gold, beautiful to the artist's eye, but "disgusting" to that of the farmer; "for," he says, "they spoil his pasture, and the cows don't like 'em." In Scotland there are upland spaces of enormous extent, and plains, too, which are so densely clothed with Heather that, in the autumn, they produce an effect of rosy or lavender-hued monotone, as continuous and complete as though the whole district were artificially clothed in some rich fluffy material of one or other of those colours. The richness of the effects of colour of these broad moorlands, heightened or deepened according to the natural undulations of the land, is rendered highly picturesque by the dark trunks of Pines or bright white of silver-barked Birches, that rise from this deep carpet-work of pinky-purple that spreads far and wide. It is thus evident that such scenes as that of Mr. Goodwin's Alpine summer might be created in any part of England where land can be conveniently spared for the purpose. Mrs. Harrison has a little glimpse of scenery called "View at Holmwood," in which the foreground is entirely composed of a stretch of closely-flowering Primroses, showing how closely-planted masses of wild flowers, each kind occupying to itself a large continuous space, may be made wonderfully effective and very beautiful in the garden landscape.

The flower-painting in the water-colour exhibitions, with the exception of two or three real gems of art by Mrs. Duffield, is not strikingly represented this season. It by no means reaches the high level of several flower subjects, treated in oil, in the Royal Academy exhibition. Mrs. Harrison's compositions at the institute are, for instance, as a rule, too indefinite in character. The extreme delicacy of flower-forms and tones is not sufficiently studied, two large compositions being especially remarkable for these sins of omission. Another lady artist, of the same name, in the "society's" exhibition exhibits flower subjects which are all, more or less, open to similar objections; a large group of *Convolvulus* major being, perhaps, the more attractive of these works. In Mrs. Duffield's works at the institute, on the contrary, delicately accurate definitions of form, and a refined appreciation of the lightest shades and tones of colour, are always well observed; a group of *Althæa frutex*, with other flowers (No. 291), and Peaches and Sweet Peas (No. 223), being very beautiful examples of this lady artist's best manner. Only one really remarkable example of fruit-painting is to be found on the walls of either exhibition; it is the work of J. Sherren (No. 149), at the institute. The composition is somewhat affectingly entitled "Bread and Wine," and consists of two bunches of Grapes, one of Muscat of Alexandria and the other of Black Hamburgh—both such as the most accomplished gardener need not be ashamed of exhibiting. They are exquisitely finished, and the general treatment strongly calls to mind some of Hunt's masterpieces in that style of art. Beneath the Grapes lies a handful of ears of Wheat; and at the back is the sacramental gold plate, a salver, and a chalice, painted as finely as Lance's well-remembered piles of plate in his famous *Gil Blas* subject, "Rolando's Cave."

In the figure subjects, in which flowers or fruit are made to play a conspicuous share, are a few pictures which ought not to be passed over without a passing word of comment. On the "society's" walls Mr. Smallfield has a charming twilight picture, which he calls "Evening Primroses." A lady of the Elizabethan time, in the picturesque costume of her day, sits thoughtfully on a stone seat as the shades of evening gather, and the night-flowering *Oenothera* is unfolding its pale yellow flowers, that shine like stars in the increasing darkness. Another subject is, a lady placing a small vase filled with Primroses upon a table, and bends over them to inhale their sweet spring odour. I forgot to mark it in my catalogue; it is a little picture worth looking for. At the institute, a large work, "Vintage Procession in the Campagna" (No. 181), by Guido Bach, has a well painted basket of Grapes, an offering to the Virgin; and a child has wreathed its beautiful Italian head with twisted sprays of Vine, with a wild grace, highly suggestive as a model for the treatment of that kind of feature in any kind of festal decoration. There is also a picture, by E. K. Johnson (No. 44), called "Summer," in the society's exhibition, in which growing flowers in a half-wild garden (tended by a very pre-Raphaelite lady), are very carefully and effectively treated, especially the Sunflowers, Hollyhocks, Cam-

* Isaiah.

panulas, and Sweet Williams. Many other subjects are worthy of a word of comment, but my allotted space is more than filled.

A GARDEN LOVER.

THE KITCHEN GARDEN.

ASPARAGUS CULTURE IN LONDON MARKET GARDENS.

THIS is a remunerative crop in good seasons, but in late cold springs, the beds do not begin to bear until May, thus materially shortening the cutting season, which must be discontinued in good time to permit a full growth of the shoots before the end of the autumn. It must also be remembered that this crop occupies the ground for two entire years without yielding any pecuniary return; on the contrary, in addition to the ground-rent, a vast expenditure is incurred in the way of manure and manual labour. Although it begins to repay a little in the third year, it is not until the fourth season that it begins to fully pay for the trouble and expense of growing it. During these three years the same ground would have yielded six, nine, or twelve other crops, each of which would amply have rewarded the cultivator for his pains. Asparagus, too, allows the ground no rest, for even in a young state it is a gross feeder; the question therefore, whether in the long run it pays well or not, is rather a difficult one to answer.

First Year.

Asparagus may be raised from seeds saved in autumn, and sown in rows from 18 inches to 2 feet apart in February. Between lines of young fruit trees, or between rows of fruit bushes or Moss Roses is the usual place in which the seed is sown. The less shaded, however, the ground is the better; but open ground in market gardens is too precious to be devoted to this crop the first year. I have, however, seen a field at Isleworth devoted to it; Potatoes, Cabbages, and Brussels Sprouts being set between the rows. Great attention is paid to the young Asparagus the first season, in the way of hoeing and cleaning, and thinning a little if too thick; and the succeeding spring, provided the plants have grown strongly, they are transplanted permanently.

Second Year.

Now is the time to consider the kind of plantation to make, and the distance apart of the rows, not the beds, as would be the case in private gardens. Market gardeners seldom make beds now-a-days, and those that do exist are gradually giving place to the single-row system. Mr. Steel, of Fulham, had lately some Asparagus beds containing three rows, planted 2 feet apart from one another, and from the centre of one bed to that of the next was 9 feet. He had also a few other beds with two rows in each, the same distance apart as in the case just named, but in this instance the beds were only 7 feet from centre to centre. Mr. Dancer, of Fulham, and some growers at Barnes and Mortlake, still have beds on the same principle. These beds, in addition to the Asparagus, yield three rows of French Beans in early summer, two rows of Coleworts in autumn, and three rows of the same in the alleys between them. The recognised mode, however, is to plant Asparagus in single rows 5 feet apart; but many prefer even a greater space than that between the rows, for Mr. Jessop, at Chiswick, has his Asparagus in single lines from 6 feet to 8 feet asunder, and I must confess that I never witnessed such fine plantations. The 5 feet wide ridges, however, being the most universal, we will suppose that to be the system adopted. The ground for the crop having been trenched and heavily manured late in autumn, it may be marked off into 4 feet wide beds with alleys intervening 1 foot wide. In these beds sow Radishes in December or January, as convenience permits; and in March or April, after removing the protecting litter from the alleys, dig them and plant therein the Asparagus about 15 or 18 inches apart. The Radish crop will soon be removed from the beds, which may be cleaned, slightly dug, and Beet sown therein, or Onions or Leeks transplanted on them, and which will occupy the space till autumn, when they too may be cleared off and Coleworts or Wallflowers planted in their place. Other modes of cropping the space between the Asparagus

might be resorted to, but that referred to and practised by Mr. Pocock between Kew and Mortlake I consider the best. Summer Cauliflowers intercropped with Lettuces occupy much room, and French Beans, if used, would necessitate so much trampling of the ground in the operation of gathering, that the Asparagus would be checked at the root and be liable to injury of the stem from breakage. An open position is also of great importance, for the more the plants are under the influence of the sun the stronger will they grow, and the sooner in the season will they yield "grass." Hoeing the surface soil and keeping all clean includes all further requirements until the end of October or 1st of November, just any time after the sprayey shoots turn yellow, when they are cut over an inch or two above the ground. As soon as the crops between the rows are removed the ground is heavily dressed with light manure, such as that used during the summer for growing the frame Cucumbers on, and which is dug into the ground.

Third Year.

This year the Asparagus is strong enough to produce a partial crop for market, consequently the mode of culture depends on whether the grower intends to have blanched or green "grass." The latter is sometimes desired as being the best for the plants, and there is a small demand for naturally coloured shoots. In this case, therefore, the ground is intercropped as in the previous year, an effort being made to change the subjects if possible. If the soil was cleared and prepared in good time, Potatoes might be planted this year; or Seakale, Spinach, or Turnips might be used instead. In case of the ridging system being preferred, the rows are earthed up a little from the broad spaces between them; but not so much as they will be in future years. On each side of this ridge a row of Cabbage or French Beans is commonly sown. Cutting begins immediately the heads appear at the surface of the soil; but it is not practised severely this year, for some shoots are allowed to grow unchecked about a fortnight after cutting begins, and it only lasts for about four weeks, when all shoots are permitted to grow. Some market gardeners scarcely cut any the third year, whilst others do so rather severely. At the end of the season the tops are cut over, and the ridges are levelled and otherwise treated as follows:—

Fourth Year.

This is the first main cropping year; consequently, what is done to the plantations this year is merely repeated in after years, until the plants become weakly and the rows patchy, when the plantation is broken up and cropped with other subjects. On the 1st of March, provided the weather be pretty dry and no frost in the ground, the rows are earthed up from the intervening spaces after having had their surface previously forked over. The coating of soil is about 10 inches deep; and, when all is nicely rounded off and finished, the ridges appear like a series of Potato pits, or broad Celery ridges, rounded at the top and void of plants, and are altogether about 24 or 36 inches in height. The ridges are cropped, as previously stated; and about the 1st of April the whole surface soil is loosened with a hoe and rake, so as to permit of an easy egress of the shoots. In ordinary seasons cutting begins about the middle of April, and last for ten weeks; but, in bad springs, it is sometimes May before it commences. It is discontinued about Midsummer Day, and is rarely practised until July; but a little longer allowance is made in the event of a late spring. During this particular year, however, the cutting is not quite so severely performed as in after ones, when, from the time it begins until it ends, not one head escapes the knife. Small and great are cut, until the 21st of June, or thereabout, when all are allowed to grow unchecked excepting in the case of some small sprayey shoots that are better removed than left. In the alleys Coleworts are now planted, either two or three rows; and in many cases, too, the ends of all the ridges, and where any blanks occur, are similarly made up. Sometimes there is also a row of Coleworts planted along the side of the ridges when the French Beans have been removed; but, if Beet had been sown there, it will remain until the autumn. I have also seen Nasturtiums grown on the same sites for yielding cut flowers and seeds for pickling. When cutting-down time comes, all the unberried

"grass" is cut and laid in heaps together, whilst the berried stalks are kept separate. The former is carted home to the fireheap or dunghill, or is kept for a foundation to hot-beds; and the latter are kept for seeding purposes in a dry and airy shed. After being stored there for a while, until the seeds become ripe and firm, the berries are separated, washed, and dried, bruised and rubbed in sand, afterwards washed again to clean the seeds, which are spread out to dry, and then stored until sowing time. Before the time of thus clearing the ridges most, if not all, the Coleworts will have been marketed; therefore draw the surface soil of the ridges into the alleys; and into these dig it rather deeply. Plant immediately some of Cock's hardy green Coleworts; no matter how big and lanky the plants may be, they will soon take to the soil, and be marketable by the end of February; then proceed with the last year's routine of ridge-making.

Plantations last in good bearing condition for six or seven years, after which time blanks appear; therefore it is considered more profitable to break them up than to keep them longer. When such is the case, they are cut from during the last year of their existence as long as the result will pay for the trouble; and if it is thought that the roots will afterwards be of any use for forcing, they are permitted to occupy the land till November, when they are lifted for that purpose; but, considering them to be too poor for that end, they are uprooted at once, the ground levelled, manured and dug, and planted with Broccoli or Cabbage. The ordinary long saw-knife is the instrument used in cutting, and the men and women employed in the market gardens are great adepts in its use. They slip down the blade alongside of the shoot, and with a peculiar twitch sever the stalk from the crown without injury to the latter or the advancing shoots. In cutting, the "grass" is laid in little heaps on the tops of the ridges, until one course of rows has been gleaned from; they are then collected into baskets, conveyed in a cart or barrow to the sheds, where they are washed, tied into bundles of a hundred (105), and are that night, or early next morning, sent to market. Mr Dancer, of Chiswick, one of the best and most experienced of market gardeners, has a very strong-growing variety of Asparagus, called Giant, a kind which, when exhibited by him some time since at South Kensington, was awarded a first-class certificate. Mr Dancer grows no other sort than this, and his stock of it, as yet, is rather limited, but I believe that he has saved all the seed he possibly could gather, with the view of its extension. As early as the beginning of November, the French growers begin to supply our markets with Asparagus, very much stronger, and indeed earlier, than our own gardeners could produce it; and this has so materially altered the price of and demand for English-grown Asparagus, that the Fulham growers and others, farming very dear land, are continually reducing their plantations, whilst some have entirely done away with Asparagus to make room for quicker-growing and more remunerative vegetables. Mr. Taylor, of the firm of Webber & Co., Covent Garden Market, informed me that the dealers there have no trouble whatever in getting a thousand bundles (one hundred heads each) at a time of forced Asparagus from the growers in the vicinity of Angoulême, and other Asparagus-growing districts of France. The French Asparagus, too, which is blanched, and about 15 or 18 inches in length, is much stouter-stalked than that grown in England; consequently it demands a higher price than the latter, the usual price varying from 15s. to 35s., or even 40s. a bundle according to the season, quality of produce, and demand for the commodity. F.

ARE NOT ONIONS TOO MUCH THINNED ?

By thinning the crop out well you will have large Onions, and in fine seasons probably well ripened; but when a plentiful crop of good sound keeping Onions is the object, it is a mistake to thin them too much. As a rule, small or moderate-sized Onions are the best ripened, and a small Onion is just as good in a culinary point of view, as a large one, if not better. For instance, small well-ripened Onions are preferred for pickling purposes, and to secure these it is the usual practice to sow the silver-skinned variety thickly, and leave them unthinned, and in this way "button Onions," as they are called are produced. By thinning the plants out we would only get thick necks wholly unsuitable for the purpose. Long-keeping qualities are very much

sought after by the Onion grower, and it is well known that well-ripened samples only will keep, and these are more certainly secured by leaving them pretty thick in the bed. To leave the plants 7 or 8 inches apart, as is generally recommended in gardening books, is a mistake, unless Onions for exhibition only are required; but where sound bulbs—say about as broad as the mouth of an ordinary tea-cup—will satisfy, leave the plants close enough together to touch each other when they attain that size, that is supposing them to be sown in rows 7 or 8 inches apart, as Onions always should be sown, in order to facilitate the clearing and stirring of the ground. If sown broadcast, then the plants should have a little more room. This is my practice, and a plentiful and sound crop of Onions is an important matter with us, where they are used every week by the bushel. When our women thin the crop they have orders to leave them about the length of their forefingers apart, and by autumn the ground has the appearance of being fairly thatched with Onions, of a size and quality fit for any culinary purpose. Cottagers who generally have not too much room in their gardens often crop thicker than is here recommended. Two years ago I saw a bed of yellow Danver's Onions in a cottage garden that would have astonished thin croppers. The rows were only 5 inches apart, and the plants from 2 to 3 inches, and the bulbs fairly clustered over one another, and literally covered the ground—very nice samples, and thoroughly ripened; for I kept samples of them till June the following year; and Danver's Yellow, though a first-class Onion, is only a second-rate keeper. In order to satisfy oneself on this matter, let anyone leave a thick and a thin row together, and weigh the produce at harvest time.

J. S. W., in the Field.

The Kerguelen Cabbage.—"The plant abounds with essential oil; and, when cooked, the Cabbage tastes like tough Mustard and Cress. Being a powerful antiscorbutic, it is invaluable to the crews of ships touching at Kerguelen's Land. Dr. Hooker says:—"During the whole stay of the Erebus and Terror in Christmas Harbour, daily use was made of this vegetable, either cooked by itself or boiled with the ship's beef, pork, or Pea-soup. The essential oil gives a peculiar flavour, which the majority of the officers and the crew did not dislike, and which rendered the herb even more wholesome than the common Cabbage; for it never caused heartburn, nor any of the unpleasant symptoms which that plant sometimes produces." The sole representative of this genus of Cruciferae is *Pringlea antiscorbutica*, a remarkable Cabbage-like plant confined to insular Kerguelen's Land, and hence often called the Kerguelen's-Land Cabbage."—Mr. A. Smith, in "The Treasury of Botany." The genus is characterised by its oblong seed-pods being composed of two convex or boat-shaped valves, without a partition between them; and by the seeds, which are numerous and in two rows, being heart-shaped at the bottom, but prolonged into a short beak at the top, and having accumbent cotyledons. The plant has a thick round root, often 3 or 4 feet long, and 2 inches in diameter, which lies along the ground, and bears at its extremity a large Cabbage, closely resembling the common Cabbage of this country, having a dense white heart and loose green outer leaves: its flower-stems grow out from below the principal leaves, and are from 2 to 3 feet high, with their lower part more or less leafy.

Effect of Camphor on Flowers and Seeds.—Before the beginning of this century, Dr. Benjamin Smith Barton, of Philadelphia published some experiments in which cut flowers or slips in water, which were about to fade or wither, were revived for a time by putting camphor in the water. He compared its action to that of spirituous liquors or opium upon animals. We think the idea and the practice have not wholly died out in this country, although very warm water is the commoner prescription now-a-days. Dr. Vogel, of Munich, has been trying these experiments over again, and he finds that camphor does have a remarkable reviving effect upon some plants, although almost none upon others, and that it quickens the germination of seeds.

Whalebone Labels.—With reference to the note and illustrations of this (see, p. 534, Vol. V.), permit me to say, that no label which requires handling, however little, before the label can be read, can ever be worthy any serious attention. In Italy a written label is thrust into a hollow Arundo stalk, fitted with a cap. To read the label, this cap has to be taken off and the paper unfolded. It is again folded up, the cap put on, and the reed thrust in the ground. It is clear that the persons who invent or tolerate such labels have no notion of the points required in a good label. The first of these is, that the writing should be easily read as one stands before the plant or tree, and without touching the label in any way, or even turning the head, which is necessary with labels written vertically.—
CURATOR.

THE LIBRARY.

A MANUAL OF BOTANY.*

Books on botany, both elementary and advanced, and from well-qualified authors, too, have issued from the British and Continental press in such numbers of late years, as to well nigh rival those of the French and German grammars which are to be met with, in almost endless profusion, in our educational establishments. It would be idle, however, to suppose that any one of these treatises on botany has yet exhausted the subject, or even contemplated its final exposition. When the broader questions of the true limitations of families, genera, and species shall, at some dimly distant period, have been finally resolved and universally accepted, there will still remain the vast field of microscopic investigation, in conjunction with that of chemical analysis, to yield to the persevering student fresh germs of thought, and fresh triumphs over the unsolved mysteries with which many of the phenomena of plant-life are still invested. As a valuable contribution in this direction, we welcome the recently-published work of Dr. Robert Brown, which forms the subject of our present notice. Of numerous important questions which, of late years, have occupied the minds of the most distinguished physiologists of various nationalities, it affords the solutions which, up to the present, have been arrived at, and these published results of the convictions of many of the most profound thinkers, laboriously collected and skilfully compressed into a single volume, is a step in advance, in the interests of botanical science, which we hail with unmingled satisfaction. Our readers will, perhaps, form some idea of the vast amount of the deductions of modern scientific research presented in this work, when they learn, from the author's preface, that "upwards of 1,200 separate papers and treatises, in German, French, English, and, to a less extent, in Danish, Swedish, Dutch, Spanish, and Italian, have been consulted, often without a greater reward than to obtain a single fact, which the exigencies of space have compelled to be relegated to a foot-note or a parenthesis." It would be obviously impossible, within the limits which our space allows us for literary

notices of this kind, to make very extensive extracts from the book. We must, therefore, content ourselves with recommending it warmly to our readers, appending the following brief extracts and illustrations, as examples of the manner in which the author has treated of the anatomy and physiology of flowering plants. It may be seen that the illustrations, which are 359 in number, are executed in a very good style.



Carlina subacaulis, one of the Compositæ, distinguished by the large development of the scales of the involucre. Fruit, *b*, terminating in a pappus; *a*, Tubular floret, surrounded by its aigrette-like calyx (pappus); *c*, Magnified view of one of the "hairs" of the pappus.

trations, which are 359 in number, are executed in a very good style.

Pappus or Aigrette.—In the order of the Valerianaceæ, and in most compositæ, the calyx is reduced to a tuft of hairs called a pappus, in which, at first sight, it seems to be very difficult to recognise the calyx at all, until we find certain plants, where we can trace all gradations between the ordinary form of calyx and the pappus, as may be seen by examining *Gaillardia picta*, *Catananche cœrulea*, and *Scabiosa atropurpurea*—the first and last of these plants presenting the two extremes, and the second named one of the medium between the forms of calyx. Each "hair" of this tuft-like calyx or aigrette, as it is often called, may be either simple or plumose by the presence of secondary barblets along its side.

Mode of Insertion of Sepals.

—They are generally attached to the receptacle horizontally, leaving, when detached, a cicatrix shaped like the arc of a circle or a horse-shoe. In the mode of insertion of the sepals there are, however, several minor modifications, though none are of any very great importance. An examination of the calyces of *Cytisus hypocistis*, *Pelargonium*, *Erisma violacea*, &c., will afford examples of several such.

Bacca, or Berry Proper.—This is a fruit with one or more loculements, generally many-seeded, indehiscent, pulpy. The attachment of the seeds to the placenta is lost at maturity, and they are scattered in the substance of the pulp. Ex. Gooseberry, and all the genus *Ribes*, *Vaccinium*, the fruit of the Vine. The term is applied rather vaguely, however. Thus, the fruit of the white Water Lily is called a berry; though the pericarp is membranous, and is surrounded by an enlargement of the receptacle, which becomes fleshy, and bears marks of its origin in the cicatrices which are on the outside of the pericarp, marking the places where the parts of the floral envelopes were attached before they fell. The bacca is also shown in the fruit of the Papaw, which may be classed under this head, as well as the somewhat peculiar fruit of the Duckweed.

In a future volume, we are promised "the history of the science, the description of the economic and medicinal plants, the extinct species, the method of studying the science, and the laws regulating the distribution of plants over the world, according to the latest views." We shall look forward to its appearance with much interest.



The Papaw (*Carica Papaya*), the type of the order Papayacem. 1, Whole plant; 2, Young plant; 3, Flowering branch magnified; 4, Flower-buds; 5, Baccate fruit, cut open to show seeds loose in the pulp.

* "A Manual of Botany, Anatomical and Physical." For the use of Students. By Robert Brown, M.A., Ph.D., F.L.S., F.R.G.S., &c. Edinburgh and London: William Blackwood & Sons. 1874.

COVENT GARDEN MARKET.

THERE is now being erected in Covent Garden Market a model of the way in which it is proposed to cover in the portion of the market that is exposed to the weather. It will be remembered that this is not the first recent attempt of the kind that has been made, a low and insignificant-looking section having been put up and pretty generally denounced not many months ago. The present attempt seems a more worthy one, being lofty and well-proportioned. So much interest being now manifested in these changes in Covent Garden, the moment is a fitting one for glancing at its past history and present condition.

Few who go to Covent Garden Market to buy fruits or flowers think that before the abolishment of conventual establishments by Henry VIII. the place where they are walking was occupied by the garden and burial-ground of a convent, although the name tells them that it was so. In the grand distribution of ecclesiastical spoils, Edward Seymour Duke of Somerset, brother-in-law of Henry VIII., and afterwards Protector of the Realm in the reign of Edward VI., obtained the land previously belonging to the Westminster monks as part of his share. In the year 1552, however, when he was beheaded, it reverted to the Crown, and "a patent [was] granted to John, Earl of Bedford, of the gifts of the Convent Garden, lying in the parish of St. Martin-in-the-Fields, near Charing Cross, with seven acres, called Long Acre, of the yearly value of £6 6s. 8d., parcel of the possessions of the late Duke of Somerset, to have to him and his heirs, reserving a tenure to the king's majesty in socage and not in capite" ("Privy Council Records," March, 1552.) The earl built himself a timber mansion in the same year on the site of Southampton Street, with a garden that ran down to the Strand, and an entrance from that thoroughfare, but the rest of the land he did not use. Covent Garden continued for some years to be an inclosure or pasture, extending westward from "the comune high waye that leadeth from the Stronde to St. Giles-in-the-Fyeldes" (now Drury Lane), almost to the present St. Martin's Lane. Queen Elizabeth's trusty Secretary of State, Sir William Cecil, lived in a house on the north side of the Strand, almost adjoining Bedford House, of the presence of which we are reminded by Burleigh and Exeter Streets, the titles of himself and of his son. This mansion was originally built upon the site of the parsonage-house of St. Martin's-in-the-Fields by Sir Thomas Palmer, in the reign of Edward VI. Adjoining his house Cecil had an orchard, and in September, 1570, Francis, Earl of Bedford, K.G., granted to him by a lease of twenty-one years a portion of the pasture of Covent Garden, which was next to his house, at a rent of 5s. a year. This lease is printed in the "Archæologia" (Vol. XXX., p. 497), from which we quote the description of the land:—"That the said Earle of Bedforde, for the goodwyll he beareth to the said Sr. Willm. Cecyll, hath demysed, graunted, and to ferme letton, and by these presentes dothe demyse, graunte, and to ferme lett unto the said Sr. Willm. Cecyll, all that his porcyon or percell of grounde lyenge in the east ende, and being percell of the inclosure or pasture communely called Covent Garden, scituate in Westm', which porcyon the said Sr. Willm. Cecyll doeth and of late yeares hath occupied at the sufferance of the said Earle, and hath bene and ys nowe dyvyded from the rest of the said inclosure called Covent Garden on the west syde of the said porcyon or p'cell nowe demysed wth certayne stulpes and rayles of wood, and is fenced wth a wall of mudde or earth on the east next unto the comune high waye that leadeth from Stronde to St. Giles-in-the-fyeldes, and on the west end towards the south is is fenced wth the orcharde wall of the said Sr. Willm. Cecyll, and on the south end wth a certayne fence wall of mudde or earthe, beinge thereby devyded from certayne gardens belonginge to the inne called the Whyte Heart and other tenementes situate in the high streate of Westm., comunly called the Stronde." The word "stulp" used in this lease is now obsolete, except in the county of Norfolk, and signifies a low post or boundary.

We hear no more of Covent Garden until about the year 1630, when another Earl of Bedford began to clear away the old buildings that were scattered over the ground, and to form the present square, by building from the designs of Inigo Jones, a church and piazza, in imitation of the square at Leghorn. In H. Lestrangle's "Annals of the Reign of Charles I." we find this adventure mentioned under the date 1632:—"The king having granted leave to the Earl of Bedford to edify at pleasure upon the Convent Garden, it being a very ample and spacious area and content, the earl plied his design with such celerity and quick despatch, as he soon reared such numerous rows of stately and ambitious buildings as made old London envy the magnificence of her sub-urbiary city." A new fashionable quarter had been much required, and the Earl of Bedford's houses were soon let to those members of the aristocracy who had no family mansions in London. In 1634 the earl granted a lease of two houses in the piazza to Sir Edmund Verney, Knight Marshal to Charles I., from which we learn that the colonnade was originally termed the

"Portico Walk," and, therefore, that the mistake of calling the arcades the piazzas was of later date. A covenant was made that the earl should have free "ingresse, egress, and regress, into, out of and from the sayd messuages, upon, by, over, and through the sayd Portico Walke, and that he, together with other his majesty's subjects, may at all times walke in, upon, and over the said Portico Walke, to and fro, at his and their own will and pleasure." Also, "that Sir Edmund Verney may expell, put, or drive away out of the said walke any youth or other person whatsoever, which shall eyther play or be in the said Portico Walke, in offence, or disturbance to the said Sir Edmund Verney." The annual rent was "one hundred and threescore poundes,"—a large sum in those days—which shows that the neighbourhood was in high repute. The inventory of fixtures is a very full and curious document of some interest in the history of building in England. It is printed in the "Archæologia" (Vol. XXX., p. 197), where it may be found. Hollar's view of Covent Garden was taken in the year 1647, and represents a very handsome square. It is taken from Russell Street, looking straight at the church, and shows the colonnade on the south-east side, which was destroyed by the fire in the last century. Through the columns we get a peep at the trees and garden-wall of Bedford House, on the south side of the square. The centre is enclosed by open posts, and the old gabled houses in Henrietta and King Streets are well shown up, adding greatly to the general picturesque effect.

The market originated in a few temporary stalls or sheds, which grew up under the shadow of the garden-wall of Bedford House. The squatters who held these stalls seem to have been recognised in 1656, as at that date the churchwardens of the parish made payment as follows:—"21 March, 1656. Paid to the painter for painting the benches and seates in the Market-place." Ten years later trees were planted "in the broad place;" and in 1668 money was collected from the inhabitants towards the expense of erecting a column in the centre of the square, which had been enclosed with railings 60 feet distance from the buildings. This column, with a dial on the top, was taken down in June, 1790. The various improvements made in the centre area are noticed in R. Brome's comedy, "The Weeding of Covent Garden," which was published in 1658:—

Of Covent Garden, when he wrote his book,
Some ten years since, when it was grown with weeds;
Not set as now it is with noble seeds,
Which makes the Garden glorious.

In 1671 the Earl of Bedford obtained a patent for his market, and eight years afterwards it was rated to the poor for the first time, when there were twenty-three salesmen, severally rated at 2s. and 1s. In 1704 Bedford House was pulled down, and the market, which had up to this date crouched beneath the shadow of its wall, was pushed into the centre of the square. Strype describes the look of the place about this time as follows:—"The south side of Covent Garden Square lieth open to Bedford Garden, where there is a small grotto of trees, most pleasant in the summer season; and on this side there is kept a market for fruits, herbs, roots, and flowers, every Tuesday, Thursday, and Saturday, which is grown to a considerable account, and well served with choice goods, which makes it much resorted unto." The market continued to prosper, and the sheds were gradually enlarged, and upper stories were added to them. This growth was watched with dislike by the vestry of the parish, who made complaints, but were disregarded.

In 1829 the sheds were all cleared away, and the site for the new market was prepared. The new building was erected in 1830, from the designs of Mr. Charles Fowler, at the expense of the Duke of Bedford. The market gained its great fame while it was excessively ugly, and the old sheds were as much frequented as the new building. The chief feature of the new market-house is the centre avenue, which became popular at once. Lately the holders of stalls have loudly complained of their unprotected condition, and the landlord has been asked to place a covering over them to prevent some of the inconveniences of our changeable climate. This demand is now under consideration. The present market, although, doubtless, a great improvement on the miserable sheds of the early part of the century, is much behind what a market of such fame, and the chief fruit, flower, and vegetable market, moreover of England, should be. Country towns have now handsome market-houses, and we might fairly look to the Duke of Bedford, who receives so large an income from Covent Garden Market, to make it worthy alike of its fame and of our great city.

When one reflects on the many fine markets now in existence, it is sad to think that the richest of all in products is also the ugliest and meanest of all; for there can be no question that the garden products sent to it are the most abundant and the best, on the whole, sent to any market. Yet, at present, it is, in attractiveness and conven-

ience, as far behind the Paris market as a small country theatre is behind the Covent Garden Opera-house. There is no space on which the various fruits and vegetables can be seen or sold to advantage; on market mornings the crowd is so dense that business is much retarded; while, as for the public visiting the market on those occasions, it is out of the question. Room for storage there is little or none, so that unsold articles have frequently to be taken away from the market at a great loss to their owners. Few who know the extent and quality of the garden produce of the environs of London will deny that a market designed so as to afford proper convenience for the display of this produce would form the most interesting spot in London. It would be beautiful, too, as the various flowers, fruits, and vegetables changed week by week with the seasons. But it is not from the point of view of ornament only that the matter is important. The public see little of the misery and danger which result from having such a busy crowd in the market exposed to the inclemency of the weather at all seasons. Before our office windows, and in the various streets and open parts of the market, hundreds of men and waggons of vegetables stand on many dreary mornings, till both are as saturated as if they had gone under the falls of Niagara without the customary overcoats; such is the present state of things. Let us hope we may yet be able to give a more cheerful report.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

ALL deficiencies in beds or borders will, by this time, have been made good, and it is now necessary to endeavour, by every possible means, to keep the plants in a growing and healthy condition for as long a period as possible. Training, staking, tying, and pegging down must receive close attention; and, if the weather continues dry, both beds and borders must be liberally supplied with water. The plants should also be strictly confined to the spaces allotted to them, so that the outlines of beds and clumps may be clearly defined. Stake and tie up Hollyhocks, Dahlias, and other tall-growing herbaceous plants which may be growing on the margins of shrubby borders, and let large clumps of Narcissi and other bulbous plants be overhauled where the leaves show symptoms of decay and the bulbs have, consequently, become ripe. Such bulbs as Narcissi, Crocuses, Scillas, Tulips, &c., may be stored away for the present, to be planted at any convenient time during the autumn; but a lengthened exposure to air tends to impair the vigour of such scaly bulbs as those of the Lily family; therefore, the shorter time they are kept out of the soil the better, and any clumps of them that have been taken up for the purpose of separation or division may be planted again at once; and, in order, as far as possible, to prevent any accidental injury being done to them while at rest, they should be carefully labelled at the time of planting. Remove dead and decaying blooms from Roses and other flowering shrubs; remove also seed-pods from Rhododendrons, Azaleas, and other American plants as soon as they have done flowering, as this, if carefully attended to now, will have a beneficial effect upon the bloom of the following season. When this is done a liberal watering should be given to the plants, an operation which should be occasionally repeated according to the state of the weather. Cuttings may now be made of the young wood of Roses; they will root freely under hand-glasses, as will also cuttings of Pinks and Pansies, *Dielytra spectabilis*, and various other hardy herbaceous plants, such as Sweet Williams and the different kinds of double Wallflowers.—P. GRIEVE, *Culford Gardens, Bury St. Edmund's.*

Indoor Plant Department.

Poinsettias should now be shaken out, re-potted, and encouraged to make strong sturdy growth. Another useful winter-blooming plant is *Begonia dipetala*. If small plants of this are at hand, and grown on freely, they will furnish quantities of bloom in the winter. *Allamandas*, *Clerodendron splendens*, and *Dipladenias*, showing flower freely, should now be trained round their trellises, but not too closely, as that gives them too stiff an appearance, and also has a tendency to cause premature decay in the leaves, which, if allowed to overlap each other, turn yellow and decay; this has also a tendency to weaken the plants and to reduce their blooming capabilities. Expose them to all the light possible, using just sufficient shading material to break the direct rays of the sun; by this means the flowers will be produced much stouter, and will stand in a cut state, if required, much longer than when treated more tenderly. Autumn-struck cuttings of hard-wooded stove plants, such as *Ixorias*, *Allamandas*, *Gardenias*, &c., which have been potted during the winter,

will, by this time, require a further shift. The aim of the cultivator ought to be to get the plants up to the required size as quickly as possible; if such things are allowed to become stunted through being pot-bound, it takes a long time afterwards to get them to move; in fact, it is better to commence with a cutting than to grow a plant on that has been allowed to get into such a condition. It would seem that the increased demand for cut flowers at the present day is illimitable; it therefore behoves gardeners to make provision to meet it. In most establishments, large or small, there will be some things held in greater esteem than others. Therefore, it is impossible to name any plants in particular that would be held in general estimation. Yet, during this and the next two months, flowers from stove plants will be largely used for mixing with Roses and other out-door productions. There is a great charm in variety; yet the old system of growing collections of plants where the object was to include the greatest number possible, both of species and varieties, is anything but calculated to meet the requirements of the present day; it is much better to confine to a reasonable extent the number of varieties of plants grown to such as are the most attractive, last the longest, and are held in the greatest estimation. If there is one plant more than another that is more generally useful as a decorative, stove, or intermediate house plant, and capable of producing quantities of cut flowers for eight or ten months in the year, it is *Ixora coccinea*. Now is a good time to either strike cuttings or procure plants of it; and, if kept clean from insects, and grown under the same conditions as to temperature and atmospheric moisture, summer and winter, that will suit Cucumbers, it will amply repay for the trouble bestowed upon it. Its flowers will stand in water for a week, and it can be cut with impunity without injuring the plants. In conservatories every attention should be paid to keeping foliage clear of insects, and to the encouragement of its healthy development. The *Clianthus puniceus* is a plant very liable to attacks of red spider, and must, therefore, be closely watched and often syringed. Plants in pots are more likely to suffer from drought at this season than those in borders, and must, therefore, be frequently examined. Tree Ferns, some Palms, and a few quick-growing large plants in borders, should have basins of earth formed round their bases, so that a thorough soaking of water can be given to them at one time without running over the border. Fuchsias, both in the form of climbers and pyramids, are now about their best. Pinch their side-shoots in freely until a few weeks prior to allowing them to bloom, and give a little liquid manure about twice a week. In growing the double-flowering kinds of *Pelargonium*, endeavour to induce a stubby growth; and, after their flowers are fairly set, assist a freer development by means of manure-water. Show *Pelargoniums* that have done blooming should be set outside, so as to enable them to ripen their wood, and they should be allowed to dry off gradually. Lilies belonging to the Japanese section should now be coming beautifully into bloom, and should be liberally supplied with stimulants. When re-potted, the pots should only be filled to within two inches or so of the top, so as to leave room for top-dressings of good rich compost. Before cutting the blooms of these Lilies, the anthers should be carefully removed, so as not to spoil the petals by the diffusion of the pollen. *Erythrina*s coming into bloom should be assisted by means of manure-water. Statice should be re-potted as they require that attention, but in the case of old plants, top-dressings and manure-waterings should be resorted to instead of giving them a shift.

Orchids.

Orchids recently imported, and which have been laid on a bed of Moss until the young growth has made its appearance, may now be potted in a fresh open compost consisting of fibrous peat and Sphagnum, on a well-drained bottom. I have always found it best in practice to watch the plants carefully until the young growth has made its appearance in the form of a plump bud, or swelling at the base of the old pseudo-bulbs, and then to pot them at once before the cluster of young roots was emitted. The roots then find their way into the compost without injury, while it is almost impossible to re-pot plants with the young rootlets an inch or more in length without bruising off their delicate green tips; and, when that happens, the young growth is very considerably checked. This is specially true in the case of *Cattleyas*, *Odonoglots*, and *Lælias*, and often results in their making a second abnormal growth, which, in its turn, is but half developed, and the consequence is few or no flowers. Keep a careful look out for insect pests. In the cool houses little shell-snails (*Helix alliaria*) often abound in the Sphagnum in large quantities, and these must be diligently picked off by hand and destroyed. Slugs often eat the succulent young growth of *Odonoglots*, *Disas*, and *Masdevallias*, and must be treated in the same manner. Woodlice, which often abound and eat leaves and roots, should be driven from their day-light haunts among the crocks or compost by plunging the plants gently into a pail of water, and removing them

one by one as they crawl out. Another excellent plan is to lay slices of Potatoes on the tops of the pots, and to examine these every morning. Another source of annoyance to the Orchid grower is the presence of ants, which often take up their quarters in Orchid-houses in considerable numbers, and overrun everything. The harm which they do does not consist in eating the plants, but in carrying rubbish into the axils of the leaves. The best way to destroy ants is to lay pieces of sponge soaked in treacle, and squeezed nearly dry in their runs. They enter the pores of the sponge in quest of the sweets, and are made prisoners in immense numbers, when they may readily be destroyed by collecting the sponges and dipping them in boiling water. Plants making growth, such as *Celogynes*, *Oncidiums*, *Odontoglossa*, and *Cattleyas* should have a copious supply of moisture at the root, and a genial atmosphere must be maintained. *Dendrobies*, which have finished their growth, may be placed in a dry airy house, and allowed more sunlight than they have lately been having.—F. W. BURRIDGE.

Indoor Fruit Department.

In early Pineries, in which the fruit has been cut, the plunging or fermenting material should be turned out, and the pits thoroughly cleansed and lime-washed. Suckers should be firmly potted in six-inch pots, using for them fibry loam and a little charcoal; after being potted they should either be plunged in front of late succession plants or in separate beds, and shaded for a short time during bright sunshine. Vines swelling fruit should be allowed abundance of moisture, both at the root and in the atmosphere. Late Vine-borders should receive good soakings of manure-water, either from the farmyard or the cesspool, occasionally; immediately after the manure-water has been applied, another soaking of pure water should be given, in order to dilute the first application, and to wash it down. Figs are now producing a second crop, and in most instances this crop seems unexceptionally fine. They should be allowed abundance of moisture at the root, overhead, and in the atmosphere. Stimulants are not often applied to Figs in the way of manure-water, but they thoroughly enjoy a mulching of good fibry loam and rotten manure. Peach and Nectarine trees done fruiting should be well syringed and supplied with water; they should also be freely exposed to the air. Melons done fruiting should either be thrown away and replaced by young ones, or cut back and encouraged to start afresh; but young plants are best.

Hardy Fruits.

The greater portion of wall-fruits will now be about commencing their second swelling. Stoning will be nearly perfected, and with it the risk of more fruit dropping. It is always safe practice to defer the final thinning till this uncertain process is completed. Some refuse to thin at all until the fruits are stoned. This is to invite failure; for, probably, the greatest strain on the tree is furnishing stone and forming stone perfecting matter. It is always safe practice to leave one-half or one-third more fruit to stone than it would be either prudent or profitable to allow the tree to ripen. In thinning fruits of Peaches, Apricots, Nectarines, and Plums, attend to such trifles as the proximity of branches, nails, and other fruits, and see that each fruit has freedom to develop itself without being crushed or malformed in any way. It is often needful to unnaul or untie a branch, and to partly twist it round to place the fruit on it in the most favourable position for developing its full size. Of course, when the crop is irregular, we are glad to leave all we can. But stone fruit, crowded together in clusters is simply superior fruit ruined, unless it be Apricots or Plums for preserving. But, in good seasons, and with all superior fruits, more depends on such small matters than on any great thing that we can do for the trees. Another trifle is the different modes of fruit-bearing of different fruit trees. Peaches and Nectarines, *Morella* Cherries, and some Plums, for instance, fruit best, and the trees are best preserved in a fertile state, and most successfully furnished with wood, by reserving only the young wood of the previous year's growth for fruit-bearing. Hence, in dis-budding or summer pruning such trees, the superfluous shoots are taken clean away, not a morsel of the shoot is left. Apricots, most Cherries, and many Plums, on the contrary, bear fruit more on spurs than on the young wood; these spurs are produced by Nature, and can also be manufactured by art, the most common mode of artificial production being the leaving of two or three buds at the base of each shoot, pinched back or pruned off. The sap that was previously expended on a growing shoot is now diverted into the development of a fruit spur. Such spurs, however, would be a positive nuisance in the first set of trees named; they are essential to the full fertility of the second, and of Apples, Pears, Grape Vines, &c.; and yet the entire difference of treatment and result turns upon a natural peculiarity of the trees overlooked by many, and, perhaps, hardly assessed at its proper value by anyone.—D. T. FISH.

Kitchen Garden.

Although a few slight showers have fallen during the past week, which, for the time, had a beneficial influence upon vegetation, the rainfall, in this district at least, has not been sufficient to reach the roots of plants; it will, therefore, still be necessary to persevere in the use of every expedient that can be adopted for the mitigation of drought. Peas, Cauliflowers, and Lettuce, can only be kept in good growing condition by careful attention. Bring up all arrearers in planting such things as Broccoli, Savoy, and Winter Greens of all kinds. Plant also a few Cabbages for autumn use somewhat thickly together. It is better to push forward work of this kind now, than to wait for a more copious fall of rain, as one or two good waterings will establish them in their new quarters, and when rain comes, they will be ready to start into active growth at once; there will, moreover, be no occasion to tread the ground when it is wet. Celery for late spring use should now be thought about. The following is a good plan for securing and keeping spring Celery in good condition. About the first week in July, after the early Peas are cleared away, a trench is opened along the front of a south border near the water supply, about 4 feet wide and 8 inches deep; 6 inches in depth of rotten manure is then placed all over the bottom, and well forked over; sufficient soil is returned to the trench to raise it up nearly, but not quite, to its original level. Plants of Williams's Matchless, or some other good red kind of Celery, raised from seeds sown in April thinly, or thinned out afterwards in the open air, are selected and planted out all over the bed, 6 inches apart. Water is given almost daily in dry weather, in the evening; and about the end of November, or just before severe frost is apprehended, each plant is tied up with a bit of matting; and the blanching process is effected in one operation, by heaping up to the requisite height, round and amongst the plants, burnt earth or ashes. Where slugs are troublesome, this will keep them off, and the Celery will be sweet, crisp, and free from decay. During sharp frosty weather, I cover with clean dry straw or Fern. In March the Celery may be dug up and laid in close together, in the same material, under a north wall; and, thus circumstanced, it will keep good long after that treated in the ordinary way has either decayed or "bolted." About the 8th or 9th, sow Enfield Market and Atkin's Matchless Cabbages for early spring use; and possibly some of them may turn in, in February or March. A further sowing of these and other kinds may be made about the 18th, and again (to stand all winter in the seed-bed) about the end of the month. If the weather continues dry, soak the land with water thoroughly several hours before sowing, and afterwards shade. Sow also a little Prickly Spinach and Tripoli Onion seed for early autumn use, but the main sowings of those things should be delayed till the end of the month. Make frequent sowings of Lettuce, Endive, Radishes, &c., at this season, to ensure a good supply, as a good crisp salad is especially important in hot weather. Parsley may yet be sown for winter and spring use, as also Early Horn Carrots, where young Carrots are in demand. Make a final planting for the season of Dwarf French Beans, selecting an early kind for this purpose. Mulch the ground between Vegetable Marrows, and peg out the shoots; thin out, stop, and nail up Tomatoes, and mulch them with manure. Shallots and Garlic, as soon as the growth dies down, should be taken up and spread out in the sun to dry, turning them over occasionally. Cucumbers in pits and frames should be frequently top-dressed, and well supplied with water, shutting them up early in the afternoon.—E. HOBDAY.

The Siphonic Watering-pot.—We have received from the patentees, Messrs. Alfred Smith & Co., of Bath, one of these newly-invented watering-pots, the special advantages claimed for which are as follow:—1. A steady and uniform flow of water, which may be regulated at pleasure. 2. Its adaptability for watering plants on upper shelves, as the pot can be used without being tilted or inclined. 3. By simply pressing a spring above the handle, it may be used under hand; or, by pulling a similar contrivance under the pot, plants may be watered at a higher elevation than can conveniently be reached by any one using an ordinary watering-pot; thus obviating, in many cases, the use of steps. Gardeners who have used this pot speak well of its action; and, doubtless, for shelf-watering, it is greatly superior to any ordinary watering-pot.

New Manure.—MM. Bellinet and Martinet state that they have succeeded in converting the nitrogen of the air into ammonia without expense, without chemical manipulation, and even without human intervention at all, by the use of certain bituminous schists. These schists contain, in much larger proportions than farmyard manure, all the elements necessary for the growth of plants. Sulphide of carbon is produced at the same time, and is said to be the only remedy for the phylloxera or Vine disease.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY'S
ROSE SHOW.

JULY 1ST.

Owing to late fluctuations in temperature and heavy rains the show of Roses on this occasion was not equal to that of former years. Several growers who had entered the list as competitors failed to put in an appearance. Mr. P. Barr and Mr. G. F. Wilson contributed much to the interest of the show, by staging two fine collections of cut Lilies; and some splendid examples of Iris Kämpferi were shown by Messrs. E. G. Henderson. In class 1, for seventy-two distinct varieties, Mr. G. Prince, 14, Market Street, Oxford, was first with fine blooms, considering the season. Among light-coloured varieties, we noted *Thérèse Levet*, a flower of soft satiny rose; *Marguerite de St. Amand*, silvery rose, fine incurved flower; *Belle Lyonnaise*, a pale sulphur tea-scented variety; *Elie Morel*, a fine flower, bright rose margined with lilac; *La France*, one of the finest of all new Roses, and of a bright rose, the outer petals being nearly white; *Baronne Rothschild*, is a fine open flower of considerable merit, the colour being a soft rosy-salmon; *Mons. Furtado* is also a nice clear sulphur-tinted variety, belonging to the Tea-scented section. The dark flowers shown in this group were very fine, and included among other kinds the following, viz., *Maurice Bernardin*, a fine open flower with large smooth petals of a bright crimson colour; *Alfred Colomb*, a full Rose, of the same colour as the last; *Claude Levet*, a fine incurved bloom, of a dark crimson tint. The second prize was awarded to Mr. C. Turner, of Slough, who had evenly matched flowers very tastefully set up. Among light kinds were *Paul Neron*, a fine large rosy-lilac; *Abel Grand*, light rose; *Princess Mary* of Cambridge, soft flesh; *President*, light rosy-salmon; *Henri Pajes*, a fine full flower, of a pale rosy-lilac colour; *Gloire de Dijon*, *Victor Verdier*, and others equally good. Among dark varieties, were fine blooms of *Camille Bernardin*, crimson-purple; *Senateur Vaisse*; *Madame Victor Verdier*, rich crimson; *Dupuy Jamin*, a fine, smooth petalled flower, of rich lilac-purple; *Ferdinand de Lesseps*, velvety crim-on; *Dr. Andry*, and *Lady Suffield*. Messrs. G. Paul & Sons, of the Old Nurseries, Cheshunt, were third, with a very fine collection, in which a new unnamed seedling Hybrid Perpetual was conspicuous, the colour being a rich fiery crimson; there were also fine blooms of *Alfred Colomb*, a soft crimson-purple; *Camille Bernardin*; *La Fontaine*, a soft lilac-purple; *Nardy Frères*, a dull purple; *Victor Verdier*, and other equally well-known kinds. In class 2, for forty-eight blooms, three trusses, Mr. Chas. Turner was first with fine flowers, the most conspicuous being three fresh blooms of *Ferdinand de Lesseps*, rich crimson; *Abel Grand*, also fine; *La France* and *Baronne Rothschild*, both excellent light flowers; *Duke of Edinburgh*; *Prince Camille de Rohan*; and *Chas. Lefebvre*, very fine dark varieties. In Messrs. Paul & Son's collection, which was second, were fine blooms of *Maréchal Niel* and *Belle Lyonnaise*, both yellow Teas. Mr. Cranston, King's Acre, Hereford, was first in the class for twenty-four varieties, three trusses of each. Among dark kinds we noticed *Marie Baumann*, *Bounty* of Waltham, *General Jacqueminot*, and *Duke of Edinburgh*; also *Paul Verdier*, a bright rosy-crimson. Among light varieties, *Madame Eugénie Verdier*, *Abel Grand*, *Baronne Rothschild*, *La France*, *Bessie Johnson*, and *Elie Morel*, were good. Mr. J. Fraser, of Leyton, was second with nice trusses, well set off by buds and foliage. Among the different varieties we notice *Senateur Vaisse*, *Duke of Edinburgh*, *Dr. Andry*, and *General Jacqueminot*, all excellent fiery-crimsons, the light flowers being well-represented by *Madame E. Verdier*, *Elie Morel*, *La France*, and *Baronne Rothschild*. Mr. G. Prince, 14, Market Street, Oxford, was third with nice flowers. The blooms of *Marie Baumann*, in this group, deserve more than a passing notice, and show what a splendid flower this is when well grown. The best box of twenty-four Roses in the show came from Mr. J. Cranston, who had *Jean Chepin*, a rich crimson-purple, but rather too small for show purposes. *Maurice Bernardin*, *John Hopper*, *Maréchal Vaillant*, *Maréchal Niel*, and other old favourites. Mr. C. Turner, of Slough, was second; and Mr. E. Cooling, of Bath, was a very excellent third.

In the Amateur's Classes, the Rev. C. Arkwright, Pencombe Rectory, Hereford, was first with forty-eight varieties, some of which were very fine. The second award in this class went to the Rev. J. M. B. Camm Monkton Wyld, Dorset, who had nice stands in which Tea-scented varieties were very fine. Mr. W. Farren, 10, Crescent, Cambridge, was third; and Mr. W. Ingle, gardener to Mrs. Round, Colchester, was a good fourth, the blooms being very neatly set up. Mr. J. W. Chard also staged a nice collection of blooms in this class. In class 6 (twenty-four Roses) Mr. W. Farren was first with a very effective group. Second, F. H. Gould, Esq., Mortimer Vicarage, Reading, with fine flowers rather soiled by the recent wet weather. Mr. W. Ingle third. Several other collections were staged in this class. In class 7 (twelve distinct varieties), Mr. J. Mapp, Corn Market Street, Oxford, was first with fine fresh flowers, including *Madlle. Marguerite Dombrain*, a fine full satiny flower of the softest rose; *Paul Verdier*, Countess of Oxford, and others. Thirteen good stands were staged in this class.

In class 8, the prizes in which were offered for Roses sent out during the past three years, the first went to Mr. Cranston, who had *Annie Laxton* a fine deep rosy

flower of good form; *Cheshunt Hybrid*, a nice variety, but past its best; *Mons. Etienne Levet*, a fine fully expanded flower of a soft rosy-lilac tint, and with very smooth petals; *Reynolds Hole*, a deep velvety-crimson, and others. Mr. Charles Turner was second with Miss A. Hassard, a finely formed full flower of the most delicate rosy flesh; *Bessie Johnson*, delicate flesh; *Princess Christian*, a globular full flower of a pale satiny rose; *Annie Laxton*, President Thiers, John Stuart Mill, a fine deep rosy-purple, and others. Third, Messrs. Paul & Son, who had nice flowers of *Wilson Saunders*, a deep velvety crimson; *Etienne Levet*; *Lyonnaise*; *François Michelson*, soft rose; *The Shah*, deep crimson; *Cheshunt Hybrid*, *Hypolite Janin*, *Thomas Miles*, a full deep rosy-crimson flower, and others. Class 9, six trusses of any new Rose sent out during the last three years.—First, Mr. C. Turner, with *Etienne Levet*, a finely-formed full flower of a deep rosy-lilac colour. Messrs. Paul & Sons were second with *Annie Laxton*, and a duplicate set consisted of *W. Wilson Saunders*. Mr. G. Prince was third with *Elie Morel*, a fine rosy flower, the petals being beautifully crisped.

Class 10, for Twelve Tea-scented Roses.—First, Messrs. Paul and Son with *Catherine Mermet* a delicate salmon-tinted flower; *Maréchal Niel*, *Niphetos*, a fine variety with paper-white flower; *Gloire de Bordeaux*, a bright rosy-lilac; *Cheshunt Hybrid*, *Souvenir d'un Ami*, fine soft flesh; *President*, white suffused with flesh, and others. In the Amateur's Class, the Rev. G. Arkwright was first with very fresh flowers, including *Devoniensis*; *Compte de Paris*, flesh; *Catherine Mermet*; *Souvenir d'un Ami*; *Reubens*, creamy-white; *Trompoe de Rennes*, an old favourite of a delicate sulphur tint; *Souvenir d'Elise*, a finely formed bud, creamy-white; *Gloire de Dijon*, and other well-known kinds. Mr. W. Ingle and Mr. W. Farren had nice groups, and were second and third respectively. In groups, and in the last named collection we noted *Maria Sisley*, a deep the rosy flower with peculiarly pointed segments. The Rev. J. B. M. Camm was first for twelve trusses of *Alfred Colomb*, a fine purplish-crimson flower, and Mr. J. W. Chard was second. Messrs. Paul & Son were first for twelve trusses of *Duke of Edinburgh*, and their stand of this fiery crimson-tinted variety was much admired; the second award went to Mr. C. Turner. For the prize offered for twelve trusses of *Baronne Rothschild*, eight fine collections were exhibited. The Rev. J. B. M. Camm was first with fine flowers, well coloured. In the nurseryman's class, Mr. C. Turner took corresponding honours with an equally fine group of blooms. The best twelve trusses of *La France* came from the Rev. G. Arkwright, whose flowers were large and finely coloured. The Rev. J. B. M. Camm and Mr. Prince also showed fine stands in the same class. Mr. G. Prince was first with twelve flowers of *Marie Baumann*, one of the best Roses in its class. Two fine stands of *Tea Roses*, consisting of *Gloire de Dijon* and *Souvenir d'un Ami* respectively, came from the Rev. G. Arkwright. Groups of Roses in pots came from Messrs. G. Paul & Sons and Messrs. C. Turner, the prizes being awarded in the order in which the names stand.

As regards miscellaneous subjects, a silver medal was awarded to a fine collection of decorative stove and greenhouse plants, Orchids, and Ferns, which came from Mr. B. S. Williams. Among them was a nice plant of the rare *Aërides Schroderii*, bearing a spike of large richly tinted flowers; *Disa grandiflora*, and a good variety of *Oncidium cuculatum*. Mr. J. Aldous also had a group of decorative plants, to which a small bronze medal was awarded. A small bronze medal was likewise given to some splendid cut blooms of *Pinks* and *Verbenas* from Mr. C. Turner. Messrs. E. G. Henderson & Son sent some dwarf *Lobelia*s in pots, very profusely bloomed. Among them *L. Nemesia* was a fine clear blue, about 3 or 4 inches high; *L. Aspasia*, same habit, but rather deeper in tone; *L. pumila maxima*, a great improvement on *L. pumila*; *L. Unique*, a dense variety of the most vivid blue imaginable, and one which will prove invaluable for the now popular system of carpet bedding. A fine group of single and semi-double flowered *Larkspurs* also came from the same firm, together with a collection of tricolor zonal *Pelargoniums*. Mr. Harrison Weir sent cut spikes of a yellow-flowered *Foxglove* (*Digitalis lutea ochroleuca*), the throat of which was mottled with dark brown. Mr. R. Dean sent a very showy collection of cut spikes of *Antirrhinums*. Messrs. Carter & Co. had a new Hybrid *Schizanthus*, named *Butterfly*, the segments of which were white, spotted with a dark purple, also a deep rosy variety of *Hedysarum coronarium*. Mr. G. F. Wilson furnished a choice collection of cut Lilies, and two splendid pans of *Nertera depressa*, very fresh and dense, profusely sprinkled with coral-tinted berries of the size of small Peas. It is quite hardy in a shady situation, and is found widely distributed in mountainous districts of both hemispheres. Messrs. Dixon & Co., of Hackney, sent lifted plants of *Calceolaria Golden Bedder*, a kind which bears large golden flowers. Messrs. Barr & Sugden had a splendid group of cut Lilies of the *Thunbergianum* and *Martagon* types. Messrs. J. Backhouse, of York, sent a blooming plant of *Mormodes Pardina*, a native of Mexico, having spindle-shaped bulbs nearly a foot long, bright green-ribbed foliage, and a short spike of yellow flowers, profusely speckled with dark brown; also plants of *Oncidium stelligerum*, a native of Mexico, closely resembling the rare *O. Barkeri* (*O. bigibrium*) in habit, but with longer and flatter pseudo-bulbs. The flowers are about an inch and a half across, borne on arching branched spikes 5 or 6 feet in length. The sepals and petals are of a creamy-yellow, spotted with brown, the lip being three-lobed, lateral lobes white, and central lobe purplish-brown. Messrs. Dick Radcliffe & Co., of

High Holborn, and Messrs. J. Bromwich & Co., South Belgravia, exhibited some elegant Fern-cases, very tastefully arranged.

Fruit.—The show of fruit was limited to one or two Melons of average merit, and a fine collection of Cherries consisting of a dozen dishes sent by Mr. J. Woodbridge, gardener to the Duke of Northumberland, at Syon. Mr. McLaren, of Ash, Surrey, sent cut fruiting branches of a prolific Raspberry, named *McLaren's Prolific*; the fruit is large of a dark red colour, but deficient in flavour. A new seedling Grape, named the *Duchess of Edinburgh*, came from Mr. W. Melville, gardener to George Gibbs, Esq., The Royal Vineyard, St. Lawrence, Jersey; the bunches were long and tapering, the berries large and oval, green in tint, fine and distinctly netted with yellow, like some of the smooth skinned Gooseberries, the foot-stalks were thin and slightly warted; though sweet and juicy with a slight Muscat flavour, it was thick skinned and otherwise of little merit. Mr. Perkins, gardener to Charles Keyser, Esq., sent a pair of fine Queen Pines, the produce of rooted suckers planted in August 1873; the heavier of the two was a splendid fruit, symmetrical and well swelled, weighing 5 lbs. 13 oz.; the smaller one being only 7 oz. lighter.

Vegetables.—Considerable interest was occasioned among practical gardeners and amateurs by the fine collections of Peas sent in competition for the prizes offered by Messrs. Carter & Co. The first award went to Mr. W. G. Pragnall, gardener to G. D. W. Digby, Esq., Dorset. The varieties were *Champion of England*, pods rather small but remarkably well-filled; *G. F. Wilson*, pods well-filled and the Peas of good flavour; *Superlative*, with very large-curved and curiously-pointed pods, the Peas in which were rather small; *Hundredfold*, with well-filled pods; *Wonderful*, one of the best of the group, the pods being rather small but well-filled, and the Peas large and of fine flavour; *James's Marrow*, a prolific variety with well-filled pods of medium size. Mr. H. Elliot, gardener to J. Hibberd, Esq., Maidenhead, was second with *Laxton's Quality*, evidently a fine and prolific variety, the flavour being sweet and good; *First Crop Blue*, another good cropper of excellent flavour; *Laxton's Supreme*, in the way of *Superlative* but rather smaller; *James's Marrow*, *Fortyfold*, a productive variety of good flavour; and *G. F. Wilson*. The first prize for four varieties went to Mr. F. Baily, gardener to T. T. Drake, Esq., Shardeloes. These were *Superlative*, *Laxton's William the First*, *Laxton's No. 1*, a small podded kind but prolific, and *Laxton's Filbasket*. Mr. G. T. Miles was second, and Mr. R. Gilbert, of Burghley, third. Mr. R. Dean sent haulm of two new Peas from his grounds at Bedford. One was named *Robert Fenn*, a prolific cropper, with from seven to nine Peas in a pod. The other was called *Dean's Dwarf Marrow*, smaller, but very productive.

First-Class Certificates were awarded to the following novelties:—

Rose Sir Garnet Wolseley (Cranston).—A seedling from *Camille de Rohan*, and in colour similar to *Marie Baumann*. It is a nice incurved flower of a rich fiery-crimson colour.

Iris Kämpferi (E. G. Henderson).—A fine flower, having six broad imbricating petaloid segments of a rich claret colour, with a bright golden streak at the base. The foliage resembles that of some *Gladiolus*, and the three-flowered scape is fully a yard high. It is one of the best of a beautiful, but shy-flowering, section of this genus.

Tricolor Pelargonium Dr. Masters (Henderson).—A dwarf, dense habited variety of considerable merit. The leaves, which are crumpled, are green in the centre, bordered with clear yellow, and having a broad bronzy scarlet zone.

Silene pendula fl. pl. (Dean).—This is a very pretty double-flowered "Catch-fly," of the brightest rose colour. It will prove useful for bedding purposes and dry sunny banks.

Lobelia (pumila) magnifica (Bester).—This is the best dwarf *Lobelia* we have ever seen, and is certain to become popular. A little patch about 3 inches high and as much through bears about 200 flowers of the most vivid blue imaginable.

Echeveria Peacockii (Croucher).—A robust habited species, the thick bluish glaucous foliage being very symmetrically arranged; each leaf is concave above, with their points incurved. It is one of the best of the small growing section, and is effective as a pot plant. The flowers are of the usual form and deep orange colour, borne on a simple second spike from 12 to 15 inches high. The spike is of a reddish-purple colour, clothed with lance-shaped bracts of the same colour as the leaves.

WEST HAM HORTICULTURAL SOCIETY.

JUNE 30TH.

THIS suburban exhibition was quite a success, the stove and greenhouse plants being excellent—indeed, better than those staged at some of our large shows this year. The principal exhibitors among nurserymen were Messrs. B. S. Williams, Rollisson, and Wright; and Mr. J. Ward, Mr. D. Donald, Mr. J. Douglas, and Mr. J. Wheeler among amateurs. Fruit, though sparsely represented, was excellent in quality; Grapes, Strawberries, and Cherries being especially fine. Vegetables, though somewhat scarce, were of average merit. The New Park, in which the exhibition was held, is of considerable extent, and contains some fine specimen Yews, Poplars, and some fine old Mulberry trees, in the trunk of one of which an Elder bush has established itself, and

is gradually splitting the Mulberry as it increases in size.

Stove and Greenhouse Plants.—In the nurseryman's class for twelve specimens, Mr. B. S. Williams was first with a well-grown group, in which were *Erica obtusa*, bearing large tubular wax-like flowers of pretty whiteness; *E. cavenishii*, a well-known yellow-flowered variety; *A. hibernica* Hendersonii, and *A. cathartica*. Anthurium Scherzerianum, Bougainvillea glabra, and other equally well-managed plants. In the amateur's class, Mr. J. Ward, gardener to F. G. Wilkins, Esq., of Teynton, was deservedly first, with twelve splendid plants, among which the following deserve special mention, viz., Anthurium Scherzerianum, with about twenty brilliantly coloured spathe; *Statice profusa*, a perfect mass of bright blue flowers; *Kalosanthes* Frederick Dicksonii, rich scarlet; and a splendidly coloured Bougainvillea glabra. Mr. J. Wheeler was second with a well-grown group, in which was *Stephanotis floribunda*, a perfectly globular mass of fresh leathery foliage of the darkest and most healthy green tint, interspersed with great clusters of sweet-scented snowy flowers. This was supported by an excellent specimen of Bougainvillea glabra. Mr. D. Donald was third with *Erica Aitoniana*, a fine old white variety with long tubular flowers; *Ixora amboynensis*, well bloomed; *Dipladenia amabilis*, and others. Good collections of fine-foliaged plants were furnished in excellent condition by Mr. D. Donald, Mr. J. Ward, and Mr. J. Douglas, the prizes being awarded in the order in which the names stand. In looking over these groups we noted a splendid specimen of the sombre-tinted *Cycas circinalis*, with graceful pinnate foliage, 5 or more feet in length. This plant is as elegant as a Palm, and, like its congener, *C. revoluta*, stands a good deal of rough usage; hence, as a companion to the latter, it deserves generally to be more grown for all kinds of modern decoration and for sub-tropical gardening during the summer months than it is. Mr. Ward's plants, although rather small, were superior to any others in the tent; they consisted of good examples of *Sarracenia flava*, *Cocos Weddelliana*, a remarkably fresh and promising little Palm; *Croton undulatum*, one of the most effective of all the newer kinds; *Lantana rubra* and *Arcea lutescens*, both distinct and effective decorative Palms; *Dracena lineata*, *Yucca aloifolia* variegata and *Dicksonia antarctica*, a well-known Tree Fern that luxuriates in a cool temperature. In the Amateur's Class for six stove and greenhouse plants, Mr. Ward was again first with a young fresh *Ixora Williamsii*, the flowers of which are of a bright orange tint, borne in enormous trusses backed by handsome leathery foliage. The group also contained good plants of *Erica depressa*; *Phenocoma prolifera* Barnesii; a well-grown *Kalosanthes coccinea*, about 3 feet by 2, and other plants equally effective. In the Nurseryman's Class, for a group of decorative plants not exceeding twenty-four in number, arranged for effect, Mr. B. S. Williams was first with a splendid collection of large plants, all being of a more or less choice character, and comprising flowering and foliage plants, Orchids, Palms and Ferns. To Messrs. Rollison of Tooting, who also had a splendid group, the second prize was awarded; and Messrs. Wright of the Nurseries, Lee, Kent, were third. Heaths were unusually excellent, the best being contributed by Mr. Ward, who had splendid specimens of *E. Ne Plus Ultra*, a fine free-habited variety with bold white flowers; *E. ferruginea* major, a deep rosy-flowered kind, profusely bloomed; *E. Parmentieri* rosea, nicely coloured; and *E. gemuifera*, a rich orange-flowered variety, tipped with green. In the class for four specimens, Mr. Ward was first with *E. ampullacea* Williamsii, a fine long-flowered white kind; *E. tricolor* rosea, well-coloured, and others.

Orchids.—Of these Mr. Ward's collection contained five richly-coloured varieties of *Odontoglossum Alexandræ*, *Dendrobium Parishii*, *D. Bensoniana*, one of the very finest of all the Indian Dendrobies; *Epidendrum vitellinum* majus, with two spikes of remarkably fine richly-tinted flowers of a glowing orange-scarlet; *Cypripedium labatum*, *C. Vestrum*, and others. In another group were well-flowered plants of *Phalaenopsis grandiflora*, *Coleogyne Lowii*, and *Cattleya citrina*, with lemon-scented flowers of wax-like consistence.

Some fine stands of cut Roses were staged by Mr. William Paul, of Waltham Cross. Fancy Pelargoniums were exhibited by Mr. Donald, and Mr. Ward was first in the class of six fine show varieties. Ferns came from Mr. J. Lane, Romford; and Mr. Simmonds also staged a very good group. Collections of Hydrangeas, zonal and tricolor Pelargoniums, Fuchsias, Coleus, Lilies, and other decorative plants, made up a very interesting exhibition.

Fruit.—Mr. Richardson, of Lordship Lane, Tottenham, furnished a Black Hamburg Vine in a pot bearing seven fine clusters of fruit; also a Golden Hamburg equally fine. Excellent Cucumbers came from Mr. J. Douglas. Melons from Mr. Stephenson and Mr. Douglas, who also staged three splendid clusters of Black Hamburg Grapes. Mr. Bone being second. While those staged by Mr. J. Lane had wonderfully fine berries, but rather small bunches. The first prize for White Grapes went to Mr. J. Douglas, who had nice clusters of Burckland Sweetwater. Mr. Bone occupying a corresponding position with three nice bunches of Muscat of Alexandria. Peaches and Nectarines of excellent quality came from Mr. Stephenson; and splendid Strawberries were furnished by Mr. E. E. Wythes, of Epping, and others. Cherries were remarkably fine, especially a dish of Black Hearts staged by Mr. Chambers, gardener to H. Fowler, Esq., Woodford. Excellent Gooseberries and Currants came

from Mr. Rant and Mr. Simmonds. Vegetables, as has been stated, were but poorly represented as to quantity, although of fair quality and appearance. Mr. S. Deard exhibited his patent boiler, an excellent and economical one for small greenhouses, hives, and other uses. Messrs. Doulton & Co. had a well-arranged group of garden vases and other garden contrivances of a smaller kind; Messrs. Middleton & Son, of Bishopsgate Street, staged some elegant crystal flower-stands and similar table decorations.

WINDOW GARDENING.

EARL SHALLESBURY distributed, the other evening, prizes to the winners in a show, held in the Old Church Gardens, Westminster, of the window gardens of the labouring classes (men, women, and children), domestic servants, and patients of Westminster Hospital, living in the immediate vicinity of St. Martin's Street, London, Westminster. The show was extensively patronised by the labouring classes in the course of the day, and it furnished a good display of window willows, some evidently reared under difficult conditions in long-made boxes, others betokening that the owners had brought knowledge as well as care to bear upon the objects of their culture. Dr. Hooker contributed a box of curious plants from Kew, but the larger number of plants exhibited were Geraniums, Fuchsias, Nasturtiums, the prize being, the "Golden Feather," Fuchsias, and other flowers of numerous London window-boxes. The prizes consisted of some really good books, principally on subjects connected with amateur and floral culture, well written, well bound, and well chosen, forming a remarkable contrast to the "gothic" style of literature which was formerly given at prize presentations. Money prizes were also given, and in all there were about 100 recipients of gifts, a large number of whom were children. The Dean of Westminster, Lady Augusta Stanley, the Rev. Canon Conway, and Mr. J. G. Taylor, M.P., were present, and Lord Hatherley and other noblemen gave their patronage to the pleasant movement. The gardens were well filled during the evening; and, after the speeches, a band played various selections.

Crystal Palace Show.—We are requested to state that Mrs. Ransley Tanton, of Epsom Nurseries, obtained the first award in the class for button-hole bouquets at the exhibition which took place at the Palace on the 20th ult., and not Mr. J. E. Rose, as stated in the official report.

Bremen International Exhibition.—A medal for merit was awarded to Messrs. J. B. Brown & Co., London, for excellence and perfection in workmanship, and cheapness of production of their Galvanised Wire Netting.

THE GARDEN.

NOTICES TO READERS AND CORRESPONDENTS.

The name and address of the writer are required with each communication; the sender of a card once will not suffice, as different correspondents frequently choose the same nom de plume. Letters and inquiries from correspondents not sending their full name and address (in addition to any name or initials they may wish to use in THE GARDEN), I cannot undertake to reply by post when that course seems desirable, and will receive attention. Not more than four kinds of plants or fruits can be named at one time. Queries and communications for the paper should be written on one side of the paper only. Correspondents will greatly oblige by forwarding photographs or sketches of particular garden scenes, fine trees, &c., for publication in the pages of THE GARDEN. All communications and letters for the Editorial department should, in order to prevent delay, be addressed to "the Editor of THE GARDEN," and not by name to other members of the staff. All communications, orders, &c., should be kept distinct, and addressed to the Publisher, 37, Southampton Street, Covent Garden, London, W.C.

THE GARDEN is published in monthly parts, and in half-yearly volumes. Vols. I., II., III., and IV. of THE GARDEN, are on sale. Price, Vol. I., Cloth Gilt, 21s.; Vols. II., III., and IV., 12s. each. Binding-cases for Vols. I., II., III., and IV., now ready price 2s. each. Reading-cases, fitted with Elastic Bands, 2s. 6d. each. The best way to procure the Reading-cases and Binding-covers is to order them through a Newssagent. Back Numbers of THE GARDEN of Vol. I., are double price 8d. each.

PEAT EARTH.—Fibrous Peat Earth for American and New Holland Plants, Ericas, and for Potting; delivered on rail at Blackwater, South-Eastern Railway, and Farnborough, South-Western Railway, in truckloads of 4 tons and upwards, at 12s. 6d. per ton; extra fibrous quality, for Orchids and Ferns, 25s. per ton; Sphagnum Moss, for Orchids, 10s. per sack.—T. WALKER, at Cannon Street, London, E.C.; where samples can be seen.

COVENT GARDEN MARKET.

JULY 3RD.

The market is just now well stocked with excellent produce of all kinds. Large importations of Pines, Melons, Cherries, and early Apricots have been received, and these are much cheaper in consequence. Home-grown fruits are very good, and include fine Strawberries, Melons, Pines, Cherries, Grapes, Peaches, Nectarines, and Figs. Vegetables are of excellent quality. Peas and Potatoes being unexceptionally good. Cut flowers consist of orange and white Lilies, Pinks, Roses, Fuchsias, Blue Cornflower, Water Lilies, and wild Grasses. Very beautiful bouquets are now made of Gardenias, Roses, Cornflower, Stephanotis, Pinks, Carnations, Bouvardias, Mignonette, Heliotrope, and other choice sweet-scented flowers.

Cut Flowers.

	s.	d.	s.	d.
Chrys. blooms, per doz.	3	0	6	0
Carnations, per doz.	2	0	3	0
Gardenias, per doz.	9	0	12	0
Heliotropes, per doz.	0	0	0	6
Mignonette, 12 bunches....	4	0	6	0
Polegioniums, Cape, per 12 sprays	1	0	9	0
Polegioniums, Zonal, per 12 sprays	0	6	1	0
Roses, indoor, per doz.	2	0	8	0
Roses, French, do.	2	0	3	6
Stephanotis, 12 sprays	9	0	12	0
Pinks	1	0	2	0

Plants in Pots.

Azaleas, each	2	0	to	5	0
Begonias, per doz.	6	0	12	0	
Cinerarias, per doz.	6	0	18	0	
Cyclamens, per doz.	12	0	18	0	
Cyperus, per doz.	6	0	12	0	
Dracena terminalis, per doz.	12	0	30	0	
Dracena viridis, per doz.	12	0	24	0	
Fuchsias, per doz.	9	0	15	0	
Heaths, in variety, per doz.	12	0	30	0	
Hyacinths, per doz.	6	0	12	0	
Mignonette, per doz.	4	0	6	0	
Myrtles, per doz.	3	0	9	0	
Palms, in variety, each	2	6	15	0	
Frimula sinensis, per doz.	4	0	6	0	
Scarlet Pelargoniums, per doz.	4	0	9	0	
Spirea	18	0	42	0	
Tulips, per doz. pots	6	0	9	0	

Prices of Fruits.

Chillies, per 100	2	0	3	0
Cats, per lb.	1	0	1	6
Cherries, per lb.	0	6	2	0
Grapes, hothouse, black, per lb.	2	0	6	0
Lemons, per 100	8	0	14	0
Nectarines, per doz.	10	0	18	0
Oranges, per 100	6	0	16	0
Peaches, per doz.	12	0	24	0
Pine-Apples, per lb.	6	0	10	0
Strawberries, per lb.	0	6	3	0
Walnuts, per bushel	8	0	12	0
Ditto, per 100	1	0	1	6

Prices of Vegetables.

Artichokes, per doz.	3	0	6	0
Asparagus, English	2	0	8	0
Beet, Red, per doz.	1	0	2	0
Cabbage, per doz.	1	6	2	0
Carrots, per bunch	0	4	0	6
Carrots, young, per bunch	1	6	0	0
Cauliflower, per doz.	3	0	6	0
Celery, per bundle	1	6	2	0
Coleworts, per doz. bunches	3	0	4	0
Cucumbers, each	0	6	1	0
Endive, per doz.	2	0	0	0
Fennel, per bunch	0	3	0	0
Garlic, per lb.	0	6	0	0
Herbs, per bunch	0	3	0	0
Horseradish, per bundle	3	0	4	0
Leeks, per bunch	0	3	0	0
Lettuces, per doz.	1	0	2	0
Mushrooms, per pottle	2	0	3	0
Mustard and Cress, per punnet	0	2	0	0
Onions, per bushel	4	0	6	0
Onions, button, per quart	0	8	0	0
Parsley, per doz. bunches	4	0	0	0
Parsnips, per doz.	0	9	1	6
Peas, per quart	1	0	2	0
Potatoes, per bushel	3	0	6	0
Kidneys, per lb.	0	3	0	6
Round, per lb.	0	2	0	3
Radishes, per doz. bunches	1	0	1	6
Rhubarb, per bunch	0	3	0	6
Salsify, per bundle	1	0	1	6
Scorzonera, per bundle	1	0	0	0
Shallots, per lb.	0	6	0	0
Spinach, per bushel	2	0	0	0
Turnips, young, per bunch	1	0	0	0
Turnips, per bunch	0	3	0	6

OBITUARY.

The death is announced, on Monday last, of the Rev. C. A. Johns, whose works on botany and natural history have attained a wide popularity. Mr. Johns, who was born in 1811, was a Fellow of the Linnean Society, and in 1869 was elected the first President of the Hampshire and Winchester Scientific and Literary Society. Among his best known works are his "Botanical Rambles," "The Forest Trees of Britain," "A Week at the Lizard Point," "Rambles in the British Isles," "Flowers of the Field," "Gardening for Children," "British Birds in their Haunts," and "Home Walks and Holiday Rambles." Not the least successful of his works were those written specially for children. He died at his residence, Winton House, Winchester.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

GARDEN FETES.

THE garden *fetes* of the metropolitan district have become the most charming attractions of the London season, as the recent entertainments given by H.R.H. the Prince of Wales, in his beautiful gardens at Chiswick, and by Lady Holland, at Kensington, and others of a similar kind prove. It is also admitted that the general characteristics of garden *fetes* have greatly advanced in attractiveness since the days when the late Duchess of St. Albans' breakfasts at Holly Lodge, were looked forward to as the climax of the festivities of the London summers of those days. Both then and now (but now far more generally) the charms of social gatherings among trees and flowers, with the air cooled by gentle and refreshing breezes, were, and are, acknowledged to be far more agreeable than assemblies in crowded rooms with an insufficient supply of fresh air, and too little space. The garden party certainly possesses great advantages over those indoor crowdings, especially when the average temperature is about 153° Fahrenheit in the sun, and 80° in the shade, slightly intensified by the presence of a comet rapidly approaching its perihelion, as at the present time. Last Wednesday was one of the most glorious, at all events one of the hottest, July days of 1874, and, by a happy conjunction of circumstances, one might pass nearly the whole day among trees and shrubs and human flowers, almost as fair and beautiful as the flowers themselves. It was the day fixed for Mr. Bohn's annual "Rose *fete*" at Twickenham; where a few hours may be lounged away both pleasantly and instructively among the rich collections of trees and shrubs. We have not space to speak of Mr. Bohn's Roses, the flower-deities of his *fete*—but beautiful as they were, and always grown in large masses of plants of each variety, which greatly adds to their effect—we must quit them hastily, in order to prepare for the garden *fete* of the season—the evening *fete* at the Botanic Garden in the Regent's Park. The first tentative *fete* of the kind in these gardens took place in 1872, when the arriving guests were greeted by a heavy thunderstorm, which, though it afterwards cleared off, yet left the Grass too wet to be dried even by the profusion of blue and red fire, which changed the great rain-drops into sapphires and rubies. The night *fete* of 1873 was more favoured by the weather; but for the floral games of 1874 was reserved the exquisitely beautiful night of July the 8th. The purple sky was quite Italian in the depth of its hue, and the new comet was the observed of all observers, to the occasional neglect of the many-hued fires that fitfully lighted tree-tops, and threw coloured gleams across the turf, and among the silks and satins and laces of the promenaders, with a fairy-like effect, that would have driven a Watteau to despair. The whole arrangements of lighting were, indeed, a great success. The festoons of white gas-lighted globes on each side of the broad walk, with a rosy-tinted one at the point of each of the supports, produced a very brilliant effect, and so lighted up the promenade and promenaders, that the illuminations may be fairly pronounced to have been what the Italians so expressively call "a *giorno*." Yet it was not precisely daylight, but seemed rather a kind of soft moonlight, even brighter than the light of day. But what would all this have been without the glorious weather, which will make this *fete* a memorable one in the annals of the *fetes* of the "Botanic?" and what would it have been without the charming laying-out of the garden itself, which, by the good taste of Mr. Marnock, has made the garden in the Regent's Park one of the most beautiful spots in Europe? The arrangements for the accommodation of Royalty made it somewhat difficult to get round the conservatory to the principal exhibition tent from the top of the broad walk, there being but a narrow space left at either end of the terrace (between ropes) for the vast crowds of spectators to crush through; but the fineness of the night, the general beauty of

the scene, and the exuberant loyalty of the British public, kept everyone in good humour, notwithstanding the uncomfortable crowding at those points, which might very easily have been avoided by roping off a sufficiently wide passageway. The first impression on entering the great tent was that, after the glorious glare of the gardens, it was altogether insufficiently lighted; for, while a few experimentalists were testing the lighting power of the magnesium light by reading the smallest print of the *Times* newspaper, the big letters of the prize labels in the tents were scarcely legible by the somewhat scanty supply of ordinary gas. It must be conceded however, leaving out all attempts to read the labels, that the effect of the subdued light was very soft and pleasing. The display of cut Roses was abundant beyond precedent, and the arrangement of them was fanciful and pleasing; but the extremely subdued light, and the fact of their being placed too far from the eye (upon the ground), rendered it difficult to judge of their excellence from a florist's point of view; though their exquisite perfume filled the air. The table decorations, as a rule, were pronounced inferior. A public, very exacting in its tastes in such matters, has been educated by the productions of our great gardeners, the deftly-skilful fingers by which they have been displayed for some years past, and the beautiful vase-forms invented for their reception have produced such happy combinations that the public taste has grown fastidious, and is by no means easily satisfied, and such uncomplimentary exclamations as "poor!" "spotty!" "no ensemble!" "trivial!" "bad!" were bandied freely about; and there was an outcry that some of the first prize objects were not always to be found. A few general principles appeared to have established themselves in the public mind with regard to floral decorations for the table. The first was, that dark stands next the cloth for crystal vases, large or small, was a glaring mistake, the clear sparkle of the glass being, in every way, preferable. Upon this principle, even the graceful Fern-fronds, when allowed to lie on the cloth, were disapproved of; and such remarks were heard, as if these fronds were swept away and the clean clear base of pure glass left undisturbed upon the cloth—a glistening icicle upon a field of snow—the effect would be much more cool and charming. Another principle arrived at appeared to be this, that small masses of the same flowers, say masses of blue flowers alternating with white—or pink or crimson with white—the effect, lightened and blended with Ferns and Grasses, was more likely to be effective than the old many-coloured system. At the same time, it was admitted, that a free and natural arrangement, if truly artistic, was a higher class of floral decoration, but very seldom realised on account of its difficulty. Among the things remarked as novelties, were one or two sideboard decorations of rich and tasteful arrangement among many of execrable meanness and barrenness of design. Lamps with glass stands arranged as receptacles for flowers, the light plunging down among the flowers producing a charming effect, but several of these were considered spoilt by a mass of common paper flowers covering the shade. There was, also great objection made to strings of barley-sugar, or glass beads among the flowers, producing a puerile and pastrycook effect of the meanest kind. There were, however, some cachepots of pure white porcelain, in which pots of fine-growing Maiden-hair Ferns were concealed, which were pronounced a success. Finally, there was a nobly-designed silver table piece, several feet long, with supports for flowers, which were artistically filled with grand Orchids and Lilies, which secured general admiration, notwithstanding the awkward nature of one of its chief features—Water Lilies growing out of looking-glass instead of water, which, it must be conceded, is rather a clap-net device, though looking-glass so used is dignified by the makers of such things by the plausible title of "a mirror lake." In conclusion, we may express a hope that in future years the floral element will be more worthily represented at such a great meeting as this. The few dinner-table and rather meagre decorations can surely be improved upon. The grand tent and the conservatory ought to be well filled, the conservatory on these occasions being devoted to the hot-house plants and Orchids. Its ordinary occupants might be placed in the open air for the occasion.

NOTES OF THE WEEK.

— SOME very fine *Yuccas* are sending up their flower-spikes in the Avenue Gardens in the Regent's Park, another proof among many of the great value of these fine plants for town gardening.

— NOTWITHSTANDING our repeated notices, in the advertisement columns, that every letter should contain the writer's name and address, we continually receive questions without them, and questions to which we can only reply by post.

— It is reported that the extensive garden belonging to the Draper's Company is to be disposed of for building purposes. It is several acres in extent, and lying, as it does, in a dense part of the city would be invaluable if formed into an open square or public garden.

— THE sub-tropical gardens in Battersea Park are now completed, and they present a very attractive display. The bedding-out in the various parks is now becoming very attractive, the mud-edgings, however, looking as ugly as usual. As regards the health and culture of ordinary bedding-plants, by the way, can anybody say what advantage they receive from being raised to the level of these plastered edgings?

— We learn from *Nature* that arrangements have been concluded between the proprietors of the *Daily Telegraph* and Mr. Bennett, proprietor of the *New York Herald*, under which an expedition will at once be despatched to Africa, with the objects of investigating and reporting upon the haunts of the slave traders, of pursuing the discoveries of Dr. Livingstone, and of completing, if possible, the remaining problems of Central African geography. This expedition has been undertaken by, and will be under the sole command of Mr. Henry M. Stanley. We suggest that a botanical collector should accompany this party if possible, so as to obtain some more definite knowledge of the luxuriant vegetation of the interior of Africa of which we know, as yet, so little.

— THE *Florist* of this month contains a coloured illustration of Messrs. Veitch's handsome orange-scarlet flowered *Rhododendron*, called *Duchess of Edinburgh*. It belongs to the *Jasmine*-flowered type, which includes, besides *Jasminiflorum*, the white blossomed *Princess Alexandra*, and the pink-flowered *Princess Royal*, and *Princess Helena*, all choice conservatory plants, to which *Duchess of Edinburgh* (a hybrid raised between *Princess Royal* and *Lobbii*) is a splendid addition. Its leaves, which are about 2 inches long, are elliptic, glossy, and coriaceous; and the blossoms, which are borne in terminal umbels of from nine to twelve together, are strikingly showy. The same number also contains a coloured representation of the *Barrington Peach*, a well-known and excellent variety.

— AMONG plants now in flower on the rock-work at Kew, are *Lychnis Sieboldii*, a good plant of which is producing large white flowers tinged with pink in abundance; a white-flowered perennial species of *Lobelia*, called *littoralis*, which, if thoroughly hardy, will become a valuable plant for rock-work; *Helichrysum scorpioides*, a showy perennial Everlasting; *Hypericum balearicum*, a dwarf species, now thickly studded with yellow flowers; a distinct kind of *Sedum* called *sempervivoides*, with rose-coloured flowers, and a good plant of *Androsace lanuginosa*, with several umbels of pretty delicate rose-coloured blossoms. The herbaceous grounds at this establishment are now full of showy plants, among the rarer and most interesting of which may be mentioned *Dianthus ramosissimus*, a much branching wiry-stemmed kind with purplish-rose-coloured flowers; the trailing *Abronia arenaria*, with showy umbels of pale yellow flowers, and *Salvia chionantha* a showy white-blossomed species. *Ligusticum pyrenæum*, a plant ornamental both in flower and foliage is also now blooming freely at Kew.

— COLLECTIONS of herbaceous and Alpine plants are now well worth a visit, many interesting plants, both new and old, being now at their best. For instance, the handsome *Morina longifolia* is just now in fine condition at Mr. Parker's establishment at Tooting, where a tuft of it is bearing no fewer than seventeen fine spikes of white and rosy flowers. Here, too, are to be seen, among a host of other attractive plants, *Omphalodes Luciliæ*; *Prunella pyrenaica*, one of the best of the genus; large tufts of *Rudbeckia californica*, a fine plant for the back of a mixed border or shrubbery; and a good tuft of *Jasione perennis*, having much larger and finer heads of bloom than those we have before seen on any plant of the kind. Among hardy aquatics, for which this place is famous, we noticed *Sagittaria obtusa*, a somewhat scarce plant with white flowers, which, when fully established, will doubtless prove itself worthy of general attention. At the Wellington Nursery, St. John's Wood, there are, also, many attractive plants now in flower, among which the following, on account of their rarity, are most worthy of mention, viz.:—*Campanula Zoysii*, a smooth-tufted and very distinct species of Bell-flower, scarcely 3 inches high, a mass of pale blue flowers, which stand erect on the stems; the handsome *Silene Elizabethæ*, a

kind with bright rose-coloured flowers; *Linum salsoloides*, of which there is a good specimen nicely in flower, and *Lychnis Bungeana*, of which there are several fine varieties blooming in such perfection as to clearly indicate that, when more common, they will make useful border plants.

— THE scarlet-berried Elder, so often seen on the Alps, is now covered with its ornamental berries in Mr. Harrison Weir's garden in Kent. It deserves to be more frequently planted than it is.

— It is important to notice the striking improvement effected in St. Paul's Churchyard by the removal of the railings to the west of the Cathedral; St. Paul's itself, and the whole of the surroundings seem altered for the better by this simple process. Many of our buildings and their surroundings are greatly disfigured by needless railings—those miserable barriers which suggested to a witty writer the remark "Thieves without and nothing to steal within."

— WE have just received from Colonel Marshall P. Wilder, of Boston, the new number of the "Proceedings of the American Pomological Society, by far the most useful and well-stored thing of the kind we have ever seen. It is in every way worthy of the country which is destined to become the greatest fruit-growing region of the earth, and contains a mass of matter of great practical value to American fruit-growers and, in a lesser degree, to ourselves. The paper and printing are of a character superior to what we usually meet with in the best works published in this country.

— A PAINTING of the grounds at Oak Lodge, Kensington, often alluded to in these columns, is now on view at the house of M. Arsène Houssaye, Avenue de Friedland, Paris. It is the work of M. Ollivier Piehot, and has for its subject the visit paid in 1872, by the Emperor Napoleon, the Empress Eugénie, and Queen Christina, to the villa of Mr. MacHenry, in Holland Park. The Royal and Imperial party with their attendants, the host and hostess and their family, are represented walking through the grounds of the MacHenry villa. A piece of water in the foreground is charmingly painted. The figures are all portraits.

— THE last number of "Jennings's Orchids, and How to grow them in India and other Tropical Countries," contains coloured plates of *Masdevallia Lindenii*, a fine plant bearing lilac-purple trifold flowers; *Cattleya gigas*, sometimes known as *C. Imperialis*, with rosy-purple sepals and petals, and a great margined purple lip with deep veins; *Dendrobium Boxallii*, with white flowers like those of *D. Bensoniæ* in form, with white sepals and petals tipped with lilac, the lip being blotched in the centre with clear yellow; and *Aërides Fieldingii*, the common "Fox-brush Orchid," an old favourite with dense gracefully drooping branched spikes of rosy-purple flowers.

— *Lilium giganteum* is now in fine flower in Professor Owen's garden, at Sheen. It was only planted out a year last spring. Its odour fills the garden. Few people seem to grow this most stately of the Lilies, though it is hardy on light warm soils. We have seen the plant flowering freely in Messrs. Dickson's Nursery, at Edinburgh, and Mr. Outram, in the *Gardeners' Record*, tells of its succeeding well in Scotland:—"Lilium giganteum stands out-of-doors at Gordon Castle, as far north as Banffshire, the seat of the Duke of Richmond, proving itself quite hardy in that locality. When I visited these gardens on June 23rd, plants of it were from 6 to 8 feet in height, showing fine spikes of bloom. Mr. Webster, the gardener there, showed me dried flower-spikes, the result of last year's growth, upwards of 12 feet high, which had each produced two dozen and upwards of flowers."

— OF the following plants coloured illustrations appear in the current number of the *Botanical Magazine*—viz., *Chrysanthemum catananche*, a dwarf cut-leaved Composite, which forms silvery tufts a few inches in diameter, and bears pale yellow flowers as large as those of the common Marigold or *Gazania splendens*. Like the last-named plant, a purple ring enriches the fertile florets of the disc. It is found at an elevation of from 7,000 to 9,000 feet on the Greater Atlas, and flowered at Kew in April of the present month.—*Erica chamissonis*: a ternate-leaved rosy-flowered species from Southern Africa.—*Romanzoffia sitchensis*: a dwarf decumbent herbaceous plant from North-western America, about 6 or 8 inches in height, with crenulate reniform leaves, and scarpoid panicles of white flowers about half-an-inch in diameter.—*Iris obliensis*: a showy species, with the habit of *I. pumila*; but with larger and more durable flowers. Its blossoms, which are produced in April, are rich purple, and as handsome as those of a *Cattleya*. It is a native of Northern Italy and the South of France.—*Campsidium chilense*: a pretty climbing Bignonaceous shrub, introduced by Messrs. Veitch, with whom it bloomed early in spring. It has bright green foliage, and drooping clusters of deep rosy tubular flowers, with an expanded five-lobed rim. It is a native of Chili, and a desirable plant.—*Pyrus baccata*: a highly ornamental tree from the Himalayan range, bearing snowy-white blossoms in dense clusters, succeeded by globular fruits as large as marbles, and of a golden-yellow colour, tinged with crimson on the sunny side. It is perfectly hardy.

THE FLOWER GARDEN.

THE COBWEB HOUSELEEK.

IN many gardens this interesting little mountaineer is a novelty as yet, and its curious downy covering and strange aspect generally, leads many to doubt its hardiness and constitutional vigour. It is, however, as hardy and as easily grown as the common Houseleek. The Cobweb Houseleek is a native of many parts of the Alps, and I have this year been in districts where it occurred on every rocky place. It is on the flanks of the warm Maritime and Italian valleys, where the snow leaves it free to the sun early in spring; and it is also in the colder and more northerly Swiss valleys, where it only escapes from its prison house in early summer. It thrives perfectly in British gardens, but being frequently grown in pots and frames (which it does not enjoy so well as a suitable position in the open air) it may seem to some a slow-growing or a difficult plant. The proper place for it is on a rock-garden, and it will grow in any open sandy soil, the sole precaution necessary being to prevent it from being overrun by taller or quick-spreading plants. It does perfectly well on level borders of sandy loam in the London district, but in all cases where it is planted in a mixed border the plant or group of plants should be surrounded by a few half-buried stones which will keep off the hoe and rake, and the foot, and prevent evaporation. The best plants I have seen are at Lamport Hall, the seat of Sir C. Isham, in Northamptonshire, where they form silvery seams and tufts as good as I have ever seen on the Alps. There should be no difficulty in establishing the Cobweb Houseleek on an old wall or ruin or open stony place where it would not be overrun by coarser vegetation. It may, of course, be used with the various small succulent plants now grown in the flower garden. I once saw a splendid specimen of this charming little Alpine growing in a pot on the outside of a window at Bromley, in Kent, and so luxuriant was its growth that the silvery rosettes drooped gracefully over the sides of the pot until they nearly touched the edge of the saucer in which the plant stood. W.

PETUNIAS AS BEDDING PLANTS.

AMONG summer bedding plants none are better than some of the showiest of single Petunias, especially such sorts as have a dense short-jointed habit of growth, that flower profusely, and that have medium-sized rounded blooms of good shape

and substance. With such plants, no matter of what colour, whether all the same or mixed, a beautiful mass of flowers may be obtained from the moment the plants are turned out at the end of May up to the end of October. Of all the shades of colour to be found in the Petunia, none are so pleasing as those of the striped kinds; for, unless propagated from the same plant, no two are exactly alike; and, even the same plant, often furnishes much diversity in the way of markings, although the colours are identical. A good striped strain ought to be devoid of any large loose flaccid flowers, huge blooms that are all points and folds, and that get torn to ribbons in the first gale of wind to which they are subjected.

For some seven or eight years I have been growing annually from seed a good number of plants of the striped forms, and by means of constant and careful selection, I have so far got rid of all self-coloured flowers, that not one plant in a hundred yields other than good striped blossoms. In some cases the ground-colour is white, striped with crimson, purple, or red-rose, and, in others white stripes are laid on a dark ground colour. Some of the flowers are, perhaps, more showy than others; but in all cases, if the variegation is present, and the shape of the flower perfect, the effect is most satisfactory. Self-coloured flowers also make most effective masses, but these look best when in distinct colours. Countess of Ellesmere, a well-known rose-coloured kind with a white throat, is a very pleasing variety; so is Warrior, a rich crimson; and there is a deep crimson-purple kind called Spitfire, that also furnishes a rich and most effective hue of colour. I once saw the last named kind planted thinly amongst a bed of silver-edged Pelargoniums, above which the dark purple blooms of the Petunia came up freely, and with excellent effect. Most of these kinds, if grown apart from others, will reproduce themselves from seed; but, as a rule, plants raised from cuttings seed but little, whilst seedling plants, especially of the white and striped kinds, seed freely. Our best single white self has smallish flowers; but the habit of the



The Cobweb Houseleek (*Sempervivum arachnoideum*).

plant is coarse, and the growth rank, so that a neatly rounded mass of this variety is never obtained. Some of the striped forms yield nearly white flowers, but these are unreliable, and are at all times liable to revert to dark shades. There are also some prettily veined flowers, a few of which are worth growing, but, as a rule, they are inferior in decorative effect or beauty to richly coloured selfs or the striped forms.

Than Petunias, few plants are more easily propagated, either by means of cuttings or seeds. Cuttings should be put in early in September when the wood is short-jointed and firm.

They will strike freely in 6-inch pots, filled two thirds up with moderately good compost, and the remainder with a mixture of sharp sand and soil. Place them on a shelf near the glass during winter; give them little water, and they will make growth enough to furnish cuttings about the end of March, and if in April, the stock plants themselves be potted up singly, a good stock of bedding plants will be secured.

Seed may be sown about the middle of September, and the seedling plants kept in pans or boxes through the winter; or it may be sown in February under glass, and, if possible, in a gentle heat, when good plants may also be produced in time for bedding out. I invariably sow about the middle of September, in a shallow pan which has been previously filled with a fine sandy compost. The soil on which the seed is sown should be kept just moist until after the plants are well up, when they may be watered freely. When about an inch in height they should be pricked out thinly into other pans or boxes, and in these they may stand through the winter, and be potted up into 60-sized pots early in the spring. The double forms of the *Petunia* make very useful pot plants, but they are not desirable for bedding purposes. The blooms are usually heavy and full, and, when wet with the rain, lie about in an ungraceful fashion, looking anything but pleasing. As pot plants grown under glass they are not subject to this misfortune; and, if the plants have been well grown, are robust and stocky, and, if they have been well pinched during the earlier stages of growth, good heads of flower will be the result. *Petunias*, whether double or single, make very showy exhibition plants; and, if well grown, are invariably admired because the hues of colour are well toned and the reverse of gaudy. I should like to see the *Petunia* more generally encouraged at our horticultural exhibitions.

ALEX. DEAN.

Belfort, W.

SAXIFRAGES.

By J. C. NIVEN, Botanic Gardens, Hull.

The Wandering Jew Group.

THIS very distinct group is represented by four well defined species, to which Borkhausen gave the appropriate generic title of *Diptera*, thus separating them from the *Saxifrages* altogether. Seeing, however, that the popular will has never endorsed the new title, it must be considered as nothing more than a technical term applied to this special section. One of its peculiarities—as indeed the name, which literally means two-winged, expresses—consists in the inequality of the petals, as regards size. When Borkhausen established his new genus, the two species then known had irregular flowers, consisting of three small petals and two large ones, the latter, being three or four times the size of the former and pendent, had somewhat the appearance of two wings. Recent discoveries have, however, brought to light another species, in which there is but one large petal, hence the original appropriateness of the name *Diptera* has become somewhat marred. A second peculiarity presents itself in the very habit of the plant, with its long slender trailing sarmentose stems, reminding one, by its growth, of the “runners” of the Strawberry. All the species in this limited section are of Chinese or Japanese origin, and appear (in spite of their “Wandering Jew” designation) to have, like the *Celestials* themselves, believed that their native country represented the entire world, and confined their rambling propensities thereto.

S. sarmentosa (of the younger Linnæus) has as synonyms *S. stolonifera* of Jacquin and *S. chinensis* of Louriero; it is the trailing plant that we not infrequently meet with in cottage windows, under the popular name of the Wandering Jew, or sometimes under that of the “Mother of Thousands.” The latter title is, however, more generally claimed by the *Linaria Cymbalaria*, though equally, if not more appropriate to our trailing Saxifrage. Its leaves, when growing vigorously, are fully 4 or 5 inches across, convex-rotund, and broadly indented, laxly covered with erect hairs and blotched with white, giving it quite a variegated appearance. The foot-stalks are dilated and fleshy at the base, clothed, as well as the back of the leaves, in a young state, with crimson hairs. The stolons originate from the axils of the lower leaves; they are long and thread-like, either simple, as in the Strawberry, or branching—a bud, which ultimately develops into a perfect plant, is produced at the extremity; this, after establishing itself in the ground, assists in the continuous

growth of the stem proper, its onward progress being only checked by the periodic arrestment of growth necessary to secure a fresh root anchorage, and the development of what were buds originally into perfectly independent little plants. When suspended in a pot, of course the rooting process is omitted, and the buds constitute a series of plantlets, extending through a series of generations. The inflorescence consists of a very lax panicle cyme, about 12 inches high, carrying six or seven flowers on each secondary division, the whole of the stalks and calyx being covered with glandular hairs; the two lower petals are large and of a creamy-white, the upper ones small, pinkish, and dotted with a few distinct crimson spots. Surrounding the ovary is a largely developed disk of a brilliant orange colour, which materially adds to the beauty of the flower. This species is of no modern introduction, dating back to the last century, but by whom introduced, or through what channel, I cannot ascertain.

S. cuscuteæformis of Loddiges, and figured by them in their “Cabinet,” is considered by some as only a minor form of the previous species; but, surely, it has full title to all the honours of a specific distinction. Its leaves are broadly oval, varying in size from a three-pennypiece to that of a penny, or even larger, perfectly flat on the surface, the margin broken by a few broad but slight indentations; there are no blotches on the leaf, but every vein is picked out with a silvery whiteness that reminds one of the *Eranthemum argyronerum*; its runners are as slender as the finest thread, or, even, hair; the flowering-stems do not attain a height of more than 5 or 6 inches, each bearing two or three blossoms, whose large developed lower petals are remarkable for the purity of the white. This species is far more tender and delicate in its constitution than old *sarmentosa*, and it delights in a moderately moist atmosphere, its slightly fleshy leaves being highly susceptible of hygrometric changes; hence, the very best place to grow it is on the back wall of a cool Fernery, where it can throw out its hair-like stolons and insert its roots into the crevices of the damp bricks, where, in the course of a season or two, it will form a beautiful mosaic with its silver-veined leaves, all the purer and brighter for the shade which such a situation affords it. There appears to be some doubt as to its native country; Engler gives it as Japan, with a query; but I should not be at all surprised if it does not turn out to be an Abyssinian plant, as I came across a few dried fragments of Abyssinian vegetation that had been gathered by a soldier in the late expedition, and I have very little doubt, in my own mind, that one leaf was that of our little Dodder-like Saxifrage; if so, this group will claim a wider range than has heretofore been assigned to it.

S. cortusæfolia of Siebold and Zuccarini takes precedence of the name *S. japonica*, with which we are in this country more familiar, and under which it was introduced and distributed by Messrs. Fortune & Standish. In appearance it claims a much closer relationship to *sarmentosa* than the last species. It is, if anything, a more vigorous grower; its leaves are a dark green, orbicular in shape, and slightly seven-lobed, covered with long, erect, crimson hairs, which hairs are so densely arranged on the leaf-stalks, and also on the young leaves, as to give a very important character to the plant; its creeping stems are developed with great vigour, and are beautifully crimson in colour; the large petals in the flowers—which, by-the-way, are produced in good bold panicles—are three-nerved, whereas, in *sarmentosa* they are but one-nerved.

S. cortusæfolia var. *tricolor* is a charming variegated form, introduced also by Mr. Fortune. In it the golden variegation contrasts beautifully with the crimson hairs, but it is far from constant in its parti-coloured state. It is of stunted habit; and, as soon as vigorous growth sets in, the plant loses its variegation, and reverts back to its normal condition; were this not so, it would be one of the loveliest plants we have for a suspended basket. I well remember seeing the first importation of it at Mr. Standish's nursery, and being perfectly charmed with it. Possibly, some of my readers may have been more successful than myself in dealing with this variety; if so, I should be glad to glean the result of their experience.

S. Fortunei of Hooker is a plant perfectly distinct from the foregoing species, in the fact that it does not possess the rambling character at all. Although Dr. Hooker, in his description accompanying the figure in the *Botanical Magazine*, appears to have assumed that it would ultimately develop runners, I have, after cultivation for a series of years, never noticed even the slightest tendency in this direction; nay, the reverse, as its foliage appears to spring from a sort of fleshy, and indeed flesh-coloured, bud, to which the offsets are so closely attached that they are with difficulty separated. Fortune's Saxifrage is, in spite of this important distinction, correctly referred to this group. Its leaves are 2 to 3 inches across, rotundly reniform, or, perhaps I ought to say, reniformly rotund, of a thick leathery substance, and moderately lobed; as to the margin, concave and glabrous, if I except the presence of a few scattered hairs; but so far separated

are they, that they scarcely militate against the appropriateness of the term glabrous. Its flowers are produced in tolerably dense panniced cymes; they are white, with a tinge of green, and have only one of the lower petals enlarged, the four smaller ones being entire as to the margin; whereas the large one is deeply lacinated, or almost lobed. The time of blooming in this plant is about the month of November—quite an exceptional thing among Saxifrages. In mentioning this fact, I am reminded that the number of Chinese and Japanese plants that bloom in the winter time is very considerable. Why such should be the case I can hardly explain. As to the hardness of Fortune's Saxifrage, though I have not fairly tested it, I am disposed to fear that our winter's severity will be against it. Be that as it may, a plant that naturally comes into blossom in the cheerless month of November, and lasts till Christmas, is by no means to be despised, and is well worthy the protection of a frame, which is all that it requires.

DOG'S-TOOTH VIOLETS.

[MR. ANDREW MURRAY, who has recently travelled over portions of the Rocky Mountain region, has communicated the following highly interesting notes on Erythroniums to the Scientific Committee of the Royal Horticultural Society.]

The yellow Dog's-tooth Violet occurs in vast numbers, covering acres with its bright and glowing flowers. One of its habitats is easily accessible from Salt Lake City, being within two hours' walk of it. It travels perfectly well in the bulb, and scores of bulbs that I sent by post wrapped up in oilskin reached England safely for a postage of a few pence. I sent all my living plants in this way through the post, and, with the single exception of an Iris, which I begin to think must be an annual, all seem to have arrived in safety. It has, moreover, the great advantage of growing within a considerable range of altitude. As I just said, it is found on the very crests of the hills, covering considerable spaces, but the first time I met it was in a small glen called the City Creek, running up from Salt Lake City and at no great elevation above it. It was a lovely morning in April, the sun beating strong into the glen or canon, the tiger beetles had just come out and were flying strong and vigorous, settling constantly on the road which meandered up the glen parallel to the stream that murmured by its side, and numerous butterflies flitting and sailing about—the American variety of the Camberwell Beauty was especially numerous and fine. I had gone about two miles up the Creek to a point where some conglomerate rocks, with caves and holes in their faces, said to have been a few years ago the abode of the grisly bear, began to contract the sides of the glen previously to opening it up somewhat wider a little higher up. The sides of the rough road and the sides of the stream itself were clothed with Willows, Poplars, Rose bushes, &c.; and the undergrowth chiefly consisted of the Holly-leaved Berberry, which grows everywhere up such glens in profusion. It was not so beautiful, however, as I expected; trodden down by man and beast it looked broken, damaged, and imperfect, for the cattle of Brigham Young, and his tenants wander over all these hillsides. The Mahonia aquifolium, therefore, in a wild pastoral country is rather a failure, though it would probably be different were there nought but Indians, deer, and bears to admire it; still even now its glossy leaves and bright yellow blossoms are refreshing and pleasing to the eye, although not to be compared with its beauty in our own country, where it is protected and cared for. Pushing along, through this and the shrubs along the river-side a bright yellow flower, something like a small hooked Daffodil, caught my eye, growing some distance ahead in a moist bend of the road among the roots and under the shade of the Mahonia and Burr Oak. "Can this be a Daffodil?" said I to myself; "I did not know that there was any in North America." I drew near, and found that it was not a Daffodil, but a large bright yellow Dog's-tooth Violet, with its petals curled back like those of a Tiger Lily. The first one that I saw had only one head; presently I saw another with two flowers on the same stem; then one with three, and on up to half-a-dozen. I was immediately on my knees grubbing at them with my knife; but it was no easy task. The longer stem seemed as if it would never show its bulb. Perseverance, however, as usual, met with its reward; several bulbs I lost by the stem breaking or becoming involved among the matted roots of the Mahonia or Burr Oak, but I got a few, and resolved to return next morning, like Oliver, and search for more. I had no botanical books with me, but a Salt Lake friend fortunately possessed a copy of Dr. Sereno Watson's recently published quarto on the "Botany of the Fortieth Parallel," being part of Clarence King's report on that region, and, having recourse to it, I made my *trouvaille* out to be the Erythronium grandiflorum of Hooker. Next day I was back to the same locality, and found one or two additional habitats, all on the City Creek Glen or canon.

While I was busily occupied in obtaining a few more bulbs I was aware of some one approaching, and looking up I saw a young man carrying a gun, looking on benignantly at my operations. "A botanist?" says he. Instinctively I felt that he, too, had been touched by Ithuriel's spear, and on inquiry *more scotico* I found that it was so. He knew a little of botany, and was able to give me the names of a good many of the surrounding commoner American plants, which were new to me. I inquired if he knew this Erythronium, and said I supposed it to be grandiflorum. "No," said he, "that is not the grandiflorum; it is white and larger. I can show you where it grows, higher up;" and he did accompany me in search of it, but missed it. What he spoke of is the white variety, described as albiflorum, and he also mentioned a pink one; these are certainly to be found in the neighbourhood, although I missed them. We did not find his white Erythronium, but we saw plenty of the yellow species or variety of which I am speaking, and as I was by that time armed with a prospector's pick instead of an insufficient knife, I was enabled to make a very good haul of bulbs.

Passing, however, from the getting of the plant to the plant itself as it has now been introduced into this country—and will, I doubt not, be hereafter sent over in still greater abundance—the readers may, perhaps, like to be reminded of what we know about Erythroniums in general, and more particularly of the species in question. Everyone knows our common Dog's-tooth Violet, Erythronium dens-canis. It is that species that has supplied the derivative of the generic name, *ερυθρον* (red), a name by no means applicable to the majority of the species, seeing that most of them are yellow or white. The E. dens-canis, although common in our gardens, is not a native of Britain, but in Switzerland and other parts of Europe it is common. It also extends all the way across Asia to the Pacific coast, through Southern and Temperate Siberia, Baikal, Dahuria, &c., where it assumes at least three different forms or varieties—the common one, one called E. sibiricum by Fisch, and another called E. parviflorum by Regel. This, I believe, is the only old-world species. Two other supposed species, one (E. bifida) with a bifid style, and another called longifolium, from Switzerland, have been described by Sweet in his "Flower Garden;" but they are only varieties. America is better provided with species. The Atlantic slope of the Continent has two—one (the common yellow Adder's Tongue), E. americanum, of which bracteatum (Boott) is a var., is yellow, and has the green leaves spotted with purplish and dotted; the other, E. albidum, has a white or bluish-white flower, and the leaves spotted but not dotted. The other names (E. Nuttallianum and E. Carolinianum) are either varieties or synonyms of these. Now, with reference to these two species, I should like the reader to note what are the distinguishing characters, for he will presently see that exactly similar differences occur in the varieties of the Erythronium of the Pacific slope; and if what is sauce for the goose should be sauce for the gander, it would appear to follow that either the two eastern species should be united, or the varieties of the western species should be separated into different species. At the same time, I should note that in speaking of the second of the eastern species (E. albidum) I do not myself know the plant, and speak only from Prof. Asa Gray's description in his "Manual." The differences then between E. americanum and E. albidum are these:—

E. americanum.	E. albidum.
Leaves—spotted with purplish and dotted.	—spotted but not dotted.
Perianth—pale yellow, spotted near the base.	—white or bluish-white.
Style—club-shaped, stigmas united.	—club-shaped, stigmas 3-cleft.

On the western side of the Rocky Mountains we have the species E. grandiflorum, which has led us to this subject. It was first described by the late Sir William Hooker in the *Flor. Bor. Amer.* ii. 182, and four varieties indicated:—

1. E. grandiflorum var. minor, Hook.; flower, yellow, and single on the stem; leaves, green, and not spotted; stigmas, united, and brought to a point. This is figured by Lindley in the *Bot. Reg.* t. 1716.

2. E. grandiflorum var. giganteum, Hook., Lindley, l. c.; flowers, yellow, from two to five flowers on the stem; leaves, green, and not spotted; stigmas, united and pointed.

As to these two varieties, there can be no doubt that they are one thing. In the large patches of them which I saw in Utah, every variety, from that with a stem with a single flower up to others with as many as nine or ten flowers on a stem, were to be seen growing together, almost as close as Crocuses in a nurseryman's flower-bed. Of this variety, therefore, we may say with Marc Antony, "Let this fellow be nothing of our strife. If we contend—out of the question wipe him."

3. E. grandiflorum var. albiflorum, Hook.; flower, white, only one

on the stem; stigmas, three-cleft, with the lobes entire at the apex; leaves, green, and not blotched.

This variety has lately been flowered by Dr. Regel, of St. Petersburg, and described and figured in the *Gartenflora* (August, 1873, p. 227), and the characters above given are taken from his description.

4. *E. grandiflorum* var. *maculatum*. Flowers same as last variety; leaves blotched.

I add this as another variety on the strength of the description given in their catalogue for 1873 by Messrs. Backhouse, of York, who have introduced it and flowered it in England. They describe it under the name of *Erythronium giganteum* (Lindl.)—the gigantic Dog's-tooth Violet—as follows:—"Think of a Dog's-tooth Violet growing 9 to 18 inches high, and bearing three to ten large flowers on one stalk, and a fine idea may be formed of this noble species. Our collector states that it forms a branching, somewhat confluent spike of flowers, usually of a creamy-white, shaded with delicate pink or purple; others are quite white, and others again of a light lemon-yellow. In some districts it is of a clear red-purple. The blossoms are individually 3 inches or more across, and very handsome, the petals being broad and well expanded. Foliage blotched and marbled with purplish brown. Months of flowering—February, March, and April."

I incline to think that in their native country April and May would better express the flowering months. Of all the varieties this seems to have differences of the greatest value. Generally speaking, one would feel disposed to admit as distinct two varieties which, in addition to other specialities have such a remarkable distinction as green leaves and blotched purple leaves, but here all the differences seem to be unstable, while the main characters are constant; thus, the bulb, which is peculiar is, I believe, the same in them all. It is of a peaked oval shape, and the rootlets spring out, not at the termination, but at about a third from the bottom. I do not think, therefore, that we can avoid coming to the same conclusion as Hooker and the American botanists, and regarding them all as mere varieties of one species.

Besides the above we have—

5. *E. grandiflorum* var. *Smithii* (Hook.), of which the flowers are rosy-purple, and one on a stem; and

6. *E. grandiflorum* var. *multiflorum* (Torrey in Pac. R.R. Rep. iv., p. 146). Flowers, bright lilac, yellow at the base on the inside; flowers, one to fifteen on the stem; stigma, club-shaped; leaves, not spotted.

It is obvious that these differ from the common yellow type in little but the colour.

THE ROSE HARVEST.

A WEEK ago the Rose harvest threatened to be like most of the other harvests of beauty which we have reaped this season, short though brilliant. Now that rains have come prospects have brightened; our Roses will abide with us for a reasonable time, and many of them promise to be, after all, exceptionally fine. Conspicuous for quality are such varieties as Marie Baumann, Peter Lawson, Duke of Edinburgh, La France, Princess Mary of Cambridge, John Hopper, Maréchal Niel, Gloire de Dijon, Madame Barriotti, La Rhone, Charles Lefebvre, Boule de Neige, Comte de Paris, Prince Camille de Rohan, Dr. Andrey, Victor Verdier, Madame Victor Verdier, Mdle. Eugénie Verdier, Madame Fillion, Devoniensis, Rose d'Or, and others, nearly all of which carry an exceptionally fine head of bloom. That magnificent Rose, Baroness de Rothschild, is later and shorter in the stalk than usual. Ipswich Gem, a pretty little Rose, almost too bright to look upon, has thrown out flowers of unusual size. I have also seen the following, specially fine this season, viz.:—Elie Morel, Ferdinand de Lesseps, Comtesse de Chabillant, Alfred Colomb, Xavier Olibo, François Michelin, Camille Bernardin, Dupuy Jamin, Fisher Holme, Exposition de Brie, Madame Hector Jacquin, Madame Vidot, Louis van Houtte, Beauty of Waltham, Madame Bravy, &c. Most Roses that were pruned late in the spring carry a large head of bloom; whilst those pruned in autumn and winter are in many instances almost bare of buds. With a little more rain and dull weather to give the roots time, the late flowers promise to be by far the best, and the July Rose shows, including the grand show at Birmingham, are likely to be better supported with Roses than those that were held in June.

D. T. FISH.

Rare Irises.—Can any of your correspondents tell me anything about the Irises known in catalogues as *I. Kämpferi*, I have never seen them in flower in any nursery or private garden, and though the description of them is very tempting, I fancy they must be very shy

bloomers. Max Leichtlin puts them down as *I. setosa* (Pall.), and says they only require to be planted in peat, but as peat is with me a very expensive article, and the varieties of this plant are mostly highly priced, I have not tried more than a few of them. From their names I suppose that they have been raised in Holland and Belgium, but of their history I can learn nothing. *Iris Monnieri*, a fine yellow species in the way of ochroleuca, from Crete, is now in flower with me, and *Iris violacea* (Klatt.), is just coming into bloom. Its habit is much the same as that of *Iris laviata* (Fisch.) which I recently saw at Kew, and I expect it is the same plant. Is there any difference between *Iris tomiolopha* (Hance) sent out by Bull, and *I. tectorum* (Max)? I suspect not, but have not yet flowered the latter.—H. J. ELWES. [Messrs. E. G. Henderson have *I. Kämpferi* now finely in flower in their nursery at St. John's Wood. It is very variable, its six great purple petals being nearly equal, and all in the same plane, like those of a Clematis flower. Other varieties have but three fully developed petals. It is planted in ordinary garden soil, and, unfortunately, is not readily multiplied, being of slow growth.—F. W. B.]

Plants in Bloom early in May at Montpellier.—The following were in bloom at Montpellier when I left there on the 3rd of May, viz., *Nymphaea alba*, *Naphar lutea*, White Thorn (single and double, the former just over), Portugal and common Broom, Persian and common Lilac, *Pittosporum Tobira*, three kinds of *Robinia pseudo-Acacia*, *Rosa multiflora*, Horse Chestnut (white and yellow), *Laburnum* (nearly over), and Guelder Rose; while about London the following were in blossom on May 29, viz., White and Red Thorns, Horse Chestnut (nearly over), Red and Yellow Chestnut, *Laburnum* (the latter in the shade in bud only), and Guelder Rose, the last almost over. The whole line of country from Montpellier to the north of France, *viâ* Bordeaux, Tours, Paris, bore traces of the late frosts. In many places the Vines were much cut; the *Acacia*, Oak, Ash, and Apple, seemed to have suffered severely, especially when growing from stools, and in sheltered hollows; while the black Italian Poplar, Willow, Alder, Birch, and Hazle, had apparently escaped. From Dover to London I saw very little sign of frost; but here, in Richmond Park, the common Brake (*Pteris aquilina*) has been damaged to a great extent.—M. MOGGRIDGE, *Richmond, Surrey*.

Viola Munbyana.—This Algerian *Viola* is a well-marked species, growing on the summits of the whole range of the Atlas Mountains in Algeria. In Munby's "Flora of Algeria," published in 1847, it was mistaken for *V. calcarata*, and in Desfontaines' "Flora Atlantica," 1808, it was confounded with *V. cornuta*. Messrs. Boissier and Reuter first described it as a new species in their "Pugillus Plantarum Novarum" in 1852. Although sufficiently distinct from either *V. cornuta* or *calcarata*, it comes very near *V. lutea*, and the length of the spur of the flower appears to be the only well-marked distinction. Like *V. lutea*, its flowers are both entirely violet and entirely yellow, and clumps of it will have as many violet as yellow flowers. In cultivation it has withstood the hardest winters, generally beginning to flower about the end of February, and attaining its greatest beauty in May.—*Florist*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Culture of *Tropaeolum polyphyllum*.—Will you kindly give me a few hints about *Tropaeolum polyphyllum*? I cannot make it do well. Ought it to be in full sun or partial shade? In rich or in sandy soil? I put a very good plant of it in the ground a little time ago, and it has quite faded away.—H. E. [This fine plant thrives well in deep sandy loam on the rock garden or in a border. There is sometimes, however, a little difficulty in establishing it at first.—Ed.]

New Semi-double Poppy.—We have received from Miss Hope, of Wardie Lodge, Edinburgh, specimens of a showy red semi-double Poppy, a seedling from *Papaver orientale*, crossed apparently with *P. bracteatum*. Miss Hope states that it grows short and robust, requiring no staking; that it is three weeks later than *P. bracteatum*, and that it lasts much longer than *P. orientale*. Its flowers stand well up above the leaves, which have a bluer tinge than the leaves of *P. bracteatum*.

Seed Sowing in Paper Pots.—A floricultural correspondent of *Moore's Rural* cuts good thick paper into three-cornered pieces, bends them in the shape of a funnel, fills them with soil, and, planting a seed in each, buries the whole in a box of soil. When the plants are ready to remove to the flower-bed, the paper and its contents are lifted out and planted like roots. The paper soon rots, and the plants never flag.

Colchicums Perishing.—I thought these hardy enough to take care of themselves, but some I put in last autumn have perished. Can this be checked in case of future planting?—H. E. [Bulbs are frequently injured by remaining too long in the shops or from being kept too long out of the ground, which is the same thing; when this is the case they very soon moulder away when put into the ground. Other causes could only be determined on the spot.—Ed.]

Culture of American Peat-loving Plants.—In reply to "H. E." (p. 6), allow me to say that no frame is necessary for a good many of these plants; many will flourish in an artificial or natural bog in this country, as, for example, the *Sarracenia* and *Orontium*; others, as *Cypripedium* spectabile, thrive perfectly in peat beds for American plants; *Trilliums* also thrive well in peat beds in very shady places in shrubberies. It is not necessary to keep American bog plants "dryish" in this country in winter.—W.

THE GARDEN IN THE HOUSE.

SPANISH BALCONY GARDENING.

ENGLAND is, perhaps, more than any other country, a land of exotics, if we apply this term, not only to flowers and shrubs, but also to styles, fashions, and objects, which have been transplanted hither from foreign quarters. Amongst other importations from abroad is the vase, which occurs so frequently in buildings of the later Stuart days. In England it is a mere architectural ornament when met with on a house-parapet, with a certain beauty indeed, but no meaning or significance. It is usually a carved block of stone, incapable of holding anything, though of a form as if intended to hold something, and, moreover, it is generally placed in a situation inaccessible to anyone but a mason. When the vase has any use in England, it must, I need scarcely say, always be within reach of a watering-can or garden syringe. If we turn to countries from which these house-parapet vases have been brought, we find that they have both use and beauty, and furnish the means of gratifying one of the most refined and elevating of pleasures, viz., the culture of flowers. Fond as the English are of gardening, this taste, fortunately, is not confined to them. The wealthy Spaniard delights in his garden, high-walled if in a town, and with gratings through which he may look into the street, or through which the passer-by may see the Orange and the Almond blossom in spring, or if the garden be in the country, it is frequently railed in with cane-work, often very prettily plaited. Of course, water is the one thing needful for cultivation in Spain (I speak of the south), the famous gardens on the walls of the Alhambra having only about one yard of earth. The Spanish town lady, who frequently lives in a street often no wider than an English alley, cultivates flowers both in her balcony and on the terrace of her house. She is not, if unmarried, allowed to walk out alone; she, therefore, sits in the evenings in her balcony, to see and be seen, and surrounds herself with flowers, from the midst of which she converses with any friend who may chance to be passing; or she may be seen by those who have the advantage of a higher station—point walking about on the terrace of her house, watering a *dama del bosque*—Lady of the Wood, a very prickly Cactus, the hedge-hog of its tribe—or a Geranium, with water costing about one penny per gallon, and brought up to her by her servant in curiously-shaped earthen pitchers. The narrowness of the streets of a Spanish town are due, partly to the necessity of getting as much shade as possible, and partly to that of economising room where city walls exist. Space for a garden is a rarity; and flowers must, therefore, be cultivated in balconies and on house-tops, or not at all. The parapets are therefore made ornamental with vases, and in these pots of flowers are placed, and thus the propriety of usefulness with beauty is preserved. This, however, is not the limit of terrace-gardening in Spain. Flowers in earthen pots stand about on various parts of the house-top, just where they get the required sun or shade; and many pleasant hours have I spent on the terraces in Murcia, listening to the castanets and guitars in the street below. As to the utilisation of ornamental vases on English houses, it can scarcely be expected in so rainy a land as ours that flat roofs will ever become general; still, where they do exist they are very pleasant places, and if

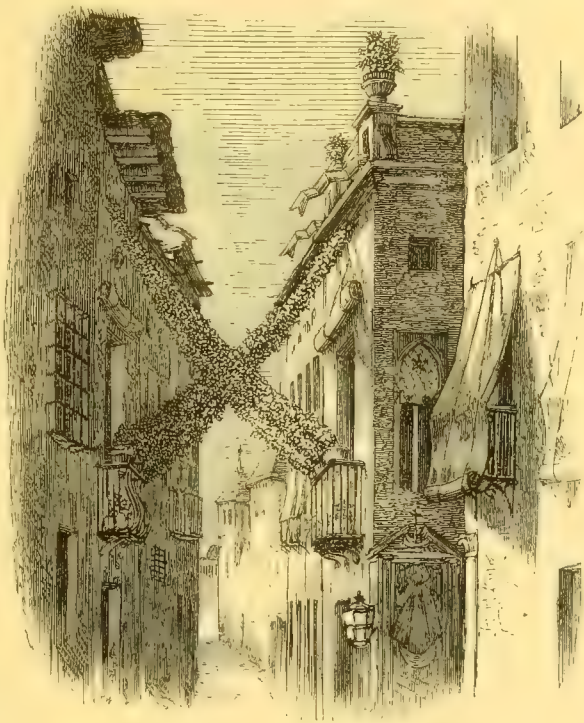
the huge stone vases which sometimes adorn their parapets were hollowed out and flowers planted in them, their ornamentation would be much increased.

Spanish Street Gardening.

With reference to Spanish street gardening, there is a plant known in Murcia as the Picardia, much used for this purpose. It is a trifoliate creeping plant (apparently *Dolichos Lablab*), which will climb up a string to the height of from 20 to 30 feet. It is also very tenacious of life, and will grow not only in the open street, as shown in the accompanying illustration, taken in the Traperia of Murcia, but also in the gloom and dusk of a Spanish house, where we have seen it patiently growing up a staircase. In the patio, or court of their houses, the Spaniards also contrive to make a summer arbour by means of a circular arrangement of Picardias in pots, training the plants up strings to a hoop suspended between the galleries, as in the Casa de Nogues, a fine old house in the Traperia, and the white columns of the Casino are every summer wreathed round with this plant, thus giving an air of coolness in a country where shade is a luxury. Why the Picardia should not be used in a similar manner in our own country during the heat of summer and autumn I do not know. It will succeed here, for I have had plants of it direct from Spain, growing equally well in the gloom of a London studio, and in the brighter atmosphere of a Sussex village. It is a hardy and a docile plant, growing in any direction in which one chooses to train it, and in whatever condition of life it is placed it seems to be always contented.

J. M. WOODWARD.

Northchurch, Berkhamstead.



Street Balcony Gardening in Murcia.

DRYING WHITE FLOWERS.

MR WERMIG's instructions, published in THE GARDEN from time to time, in reference to drying flowers and Grasses, have so much pleased me that I am induced to ask a few questions respecting the preservation of white flowers. In some cases I have succeeded very well with these; but, in others, I have failed. The floral leaves or, rather, petals soon curl and turn yellow, especially those of Roses, when dried in sand. Is there any chemical agent which could be used to bleach them after being dried? By what process can I pre-

serve white Camellias, Tuberoses, Pinks, Roses, &c., so that they will retain their original whiteness and form? I have failed to dry white Camellias without being spotted. In drying the Immortelle with borax ought the flowers to be bleached first, or remain in their natural yellow colour?—L. F. SANDERSON, River Bank Nursery, San José, California.

[To the foregoing Mr. Gustave Wermig, to whom this letter has been sent, furnishes the following reply:—If Mrs. Sanderson did not succeed in preserving white Camellias, white Roses, Tuberoses, and similar flowers, she has not had a worse result than the most experienced preservers of flowers have. Up to this time I do not know a single instance in which I have seen a dried specimen of the above-mentioned flowers, and of many others—as, for instance, all the Orchids, and most flowers of Monocotyledonous plants. White flowers, especially, are very difficult to manage, as they nearly always become spotted with a shade of yellow, which gives them a rather dirty appearance. The only flowers which are pure white in bouquets of Everlastings are to be found amongst the true Everlastings, viz., the pretty little *Anemobium alatum*, white *Immortelles*, *Xeranthemum annuum album*, &c. How to preserve these well I described in my former articles. Even among dried white Asters, although much used and, if well done, pretty looking, I never could

find one which was pure white; every one had, more or less, a shade of yellow. It may be that, with the aid of chemistry by-and-bye, we may succeed in preserving a greater number of flowers in their natural colours; but, up till now, we must be contented with a limited number. Referring to the other question in the above letter about the colouring with borax, Mrs. Sanderson may, without hesitation, take the Immortelles in their natural state; yellow as they are, they turn to a beautiful scarlet if managed in accordance with the directions which I gave in a former number of the *THE GARDEN*. I must add, however, that flowers coloured with borax become paler in the course of time, especially if exposed to the sun; while those coloured by aniline keep their colour much longer. Borax, however, is cheaper and gives the finest scarlet.]

THE FRUIT GARDEN.

CAUSES OF THE EXHAUSTION OF FRUIT TREES.

By P. T. QUINN.

THE failure of certain varieties of fruit to bear maximum crops of well developed specimens every year, or even every alternate season, under what would be acknowledged as high culture, does not always prove that such a variety is worthless and should be placed among the rejected fruits, for, with similar treatment, this same variety, grown upon a different quality of soil in another locality, might yield abundantly of full-sized fruit, recommending itself by its natural thrift and productiveness. Failures arising from uncongeniality of soil and climate, are striking in every district where fruit growing has been attempted in this country. At this time, among the more intelligent cultivators, it is very generally accepted, both in practice and theory, that there are comparatively few varieties of our multiplicity of kinds that can, with any prospect of ultimate success, be recommended for orchard planting beyond the boundaries of single States, nor is it rare to find instances where different sections of the same State, call for entirely different lists of fruits, owing solely to the causes named. I mention these facts here, and lay particular stress upon them, in this brief paper, for I am well aware of the fact, that there is nothing more conducive to neglect and ill-usage in the management of a fruit orchard, than to begin with a lot of varieties unsuited to the locality. Therefore, while tracing the causes of "exhaustion of fruit trees," it may be well to warn beginners from taking a wrong step at the start, and one so prolific of bad results that is so likely to mar the path of the inexperienced fruit culturist. Choose the list of varieties then after full deliberation and thorough canvassing of the subject, and let this care and caution govern every step taken, not only in selecting lists of kinds, but also, from whom such trees should be purchased, for at this critical period there are two more important considerations that will need earnest attention. The first, is to be sure and get strong and well-grown trees, and secondly, that such are true to name. To start with poorly-grown stock, is courting disease and disappointment on the threshold of an undertaking, and to have fruit trees turn out untrue to name, is one of the most discouraging events that the beginner has in store for him, for it will prove as expensive as distasteful, bringing pangs of regret, too late, however, to remedy. Both of these may easily be avoided, and at no extra cost, by ordering the trees from some responsible nurseryman who has his reputation at stake, for such are always quite as anxious to send out good stock and that true to name as the inexperienced purchaser is to be sure of these two points at starting. In treating the subject of "exhaustion of fruit trees," from a practical stand-point, the old and familiar adage comes into play, that an "ounce of prevention is better than a pound of cure," for trifling mistakes made at starting very often lead to disastrous results. Before planting Corn, Potatoes, or Onions, successful growers are sure to make a careful survey of the condition and quality of the soil, adding what it may lack before depositing the seed, for to the wise it is self-evident unless these are up to the standard, the profits will be small. And so it is with the market gardener, who raises two and sometimes three crops from the same ground the same year, and this year after year for a lifetime, without exhaustion of the soil, but, on the contrary, improving it each year. But the gardener knows full well, without being told, that if he raises two crops from the same ground in a year, he has to manure for two, for if not, it is time and money thrown away, and better by far to only attempt one instead of two. If persons, in starting a young orchard, would always follow the market gardener's rule, the end would justify the means, and instead of a meagre supply of fertilising material for one crop, there should be a liberal allowance given for two; in due time the trees would reimburse threefold for the outlay. But how very seldom we find this carried out in orchard practice. With a

young orchard of Apples or Pears, no returns in the way of fruit are expected for six or seven years, and in the meantime the ground is cropped as usual, to pay expenses, using just enough of manure to bring the cultivated crop to maturity, forgetting or overlooking the fact that there are two crops on the same ground, each having needs, while only enough of manure is applied for one. By this short-sighted economy the trees are pinched, their growth and vigour impaired, and, in thousands of instances, the orchard permanently injured, leaving what fruit such trees produce at the mercy of the insects that now-a-days infests our orchards. Even when the ground is in good condition and fertile at the time of planting, following a plan similar to the one described, the results cannot be otherwise than fatal to the health and productiveness of such trees. Although the bad effect of such treatment may not show itself in so short a time, as when orchards of Apples or Pears are sown in cereals or Grass, still it tells against the trees in the long run. In Pear culture, exhaustion and premature death of certain varieties is hastened by neglect in furnishing the soil with fertilising material and allowing young trees to overbear. This latter practice has, in my belief, permanently injured more Pear trees than all the other causes combined, and cannot be too strongly condemned or denounced, for whenever encouraged it is sure to prove fatal. In my planting of the Pear in the future, I will not allow a Pear to grow on a tree, no matter how vigorous it may be, until the tree is at least five or six years in place. Under good treatment, by this time the trees will be of good size, the roots well established, and the tops strong and capable of carrying a crop without running any risk of injuring the trees. I know from experience that this is by far the best plan to follow.

Another and very productive source of exhaustion is in planting fruit trees too far apart. When Apple trees, for instance, are set 40 feet apart each way, and Pear trees 25 feet, there are wide intervening spaces between the trees, that under the most favourable auspices of high culture it will take, at least, a quarter of a century for the trees to shade and occupy the whole of the ground. Five or six years from the time of planting such an orchard, the old custom was, and, by the way, it is very common even now, to sow the orchard down to Grass, and keep this part of the farm in permanent meadow. In open ground, meadows are seldom left longer than four or five years without breaking up the sod, cropping for two or three years, and again re-seeding. But, owing to the inconvenience of ploughing among trees, and the uncertainty of getting hoed crops to grow in the shade of such, the sod in the orchard is left unbroken five, ten, and twenty years. In these long terms, the more nutritious and better quality of Grasses are gradually run out, and replaced by the more vigorous and inferior native sorts, much more formidable rivals in the contest for food than the former occupants—a fact that tells its own story from year to year in the starved appearance and unfruitfulness of such trees. However, the crop of hay is cut annually, and the Apples gathered and taken away, while there is nothing returned in the shape of manure to make up, in whole or in part, for this annual drain upon the soil. Within my own compass, I know of dozens of Apple orchards that have been kept constantly in Grass from twelve to twenty years, the Grass cut, and Apples gathered (when there were any to gather), and to my knowledge there has not, within any five years, been enough manure applied to raise one crop of Potatoes, nor, during that time, as much labour given to the trees as would be in raising a single crop of corn. Yet these very men who are excellent grain farmers, will wonder why it is that Apples don't grow and bear as they formerly did when they were boys, and that there is no use in trying any more. Grass is bad enough, under the best treatment, in an orchard where manure is applied to the surface in liberal doses at regular intervals; but when this part is neglected, or overlooked for a term of years, it will need no prophetic vision to foresee the final result. Meagre crops of very indifferent fruit will be the sum total of such treatment. That there are certain old favourite sorts of fruit that grew vigorously and bore abundantly, in the first half of the present century in many localities, but of late years, owing to climatic causes, have hopelessly failed under the best culture, none can dispute. But in the meantime, others, and equally valuable kinds, have taken their places, kinds that respond freely to high culture and are fully up to the standard in quality. These cases of failure are confined to a limited number of kinds, and do not, as many suppose, affect the whole list of sorts. To make fruit culture pay the highest profit, I am thoroughly convinced of the importance of close planting, and low heading, so that when they reach the bearing age, the ground will be exclusively given up to the trees. Manure should be applied regularly, and the surface kept under the plough, running this implement, among bearing trees, not deeper than 2 or 3 inches.—*Proceedings of the American Pomological Society.*

THE GARDENS OF ENGLAND.

BURGHLEY GARDENS, NEAR STAMFORD.

BURGHLEY House, one of the finest examples of the Elizabethan style of building extant, is a stately pile irrespective of its historical interest, and the well-known romantic associations with which it was invested by one of the later Cecils. Imposing mansions are, however, easily created, or, according to Lord Bacon, "men come to build stately, rather than to garden finely." I will, therefore, direct attention on this occasion more particularly to the noble and widely-spread park, the fine trees which it contains, and to the useful fruits and vegetables with which the fruit and kitchen gardens are stocked, than to technicalities of architecture. The park consists of some 1,500 acres, from the more elevated positions of which, some extensive and beautiful views are obtained of the town of Stamford, and of the well-wooded country beyond it. There are, strictly speaking, three parks, all well-planted; the lower one being diversified by a large sheet of water, which stretches away like a broad river immediately in front of the mansion. Here, as elsewhere, are some noble trees—Oaks, Elms, and Chestnuts, while here and there the striking foliage of the Purple Beech stands out conspicuously, backed by the lighter foliage of Maples and Limes. There are also a few stately Cedars which throw their sombre-tinted branches over the turf in every direction. Hawthorns are plentiful, and, by the abundance of fruit which they are producing, some idea may be gleaned as to how attractive they must have been early in the season when covered with snowy flowers. Chestnuts form a great feature here, and some fine glossy-leaved Oaks are remarkable for their size and vigour. The High Park, as it is called, is an agreeably undulated piece of ground of considerable extent, well stocked with deer. Here, also, are some fine avenues of Limes, whose leafy interlacing branches form a perfect Gothic canopy overhead. These are always beautiful; but, when seen under golden sunlight or silvery moonbeams, and when strong light and shadow throw the perspective into bold relief, then is the time to see the avenues at Burghley at their best. Broad patches of Fern afford shelter for the dappled deer, which are seemingly unconfined, owing to the care with which all boundary lines have been hidden from view. Scattered here and there over the park are some picturesque thatch-roofed cottages, overrun with climbing Roses and Clematises, the effect of which is excellent. The fruit gardens are fully a mile from the mansion; they are situated at the extremity of the High Park, and are, for the most part, surrounded by a sunk fence. Inside are parallel walls, against which the fruit-houses are erected—all lean-to structures, heated by a pair of Weeks's tubular boilers, set side by side.

The Vineries.

I have seen these houses—some half-dozen in number—before, on several occasions, but never saw them look better than at present. Anyone seeing them and noting the unusually heavy crops which the Vines are bearing, would be sure to predict their becoming worn out at no very distant date. This is, however, far from being the case, and, in point of fact, they are not in the least overworked, although they would certainly appear to be so to ordinary cultivators, who seldom take more than eight to twelve bunches from a Vine. Mr. Gilbert's theory is "plenty to eat and plenty to do," and it is a system to be recommended, judging from the results realised at Burghley. A house of Hamburgs here, any enthusiastic Grape grower would go miles to see; the clusters are not only large and numerous, but every berry has an oblate or flat-ended form, a sure sign that they are well fed. These are colouring finely, and will succeed the Grapes now being cut from pot Vines. A Vine of Ferdinand de Lesseps, a seedling raised by Mr. Pearson, of Chilwell, with a fine musky flavour, is here doing better than I have ever seen it elsewhere. It is grafted on a black Hamburg stock, and is bearing about a dozen clusters, the largest weighing fully three quarters of a pound. When well grown, as at Burghley, this is a most desirable Grape, being quite distinct in flavour from all other kinds, and very early. The Vine borders at Burghley are all mulched with well rotted manure, and some idea of the way

in which the Vines are fed may be gleaned from the fact that only a day or two before my visit Mr. Gilbert had poured nearly 4,000 gallons of water on one of these borders alone, a saturation which washed down the nutriment from the mulching to the roots. Failures in fruit culture occur more from want of water than from any other cause, and though drought is most to be feared in the case of Peaches, Nectarines, and other fruits planted in inside borders, yet even Vines planted in outside borders are greatly benefited by copious waterings all through the hottest and driest months of the year. One thing in particular struck me in regard to all the Vineries at Burghley, and that was not only the abundance of fruit which they contained, but what is of more than equal importance, stout short-jointed canes and fine fresh green foliage in abundance, a sure proof that the roots are in a suitable medium. Some of the leaves on the Black Hamburgs measured from a foot to 15 inches in length, and quite as much in breadth; and, notwithstanding the dry season, I did not see a trace of red-spider. About twelve months ago, Mr. Gilbert planted a house of late-keeping Grapes, such as Gros Colman, Waltham Cross, Seaclyffe Black, and others, including some Vines of Trebbiano, a kind which, at Burghley, is found to be one of the finest and most valuable of all late-keeping Grapes. To have it in its best condition, however, it must be perfectly finished off, *i.e.*, thoroughly ripened, otherwise it scarcely reaches mediocrity, a remark which equally applies, to Gros Guillaume or Barbarossa, as it is commonly called, although when well-ripened under sun-heat it is one of the best of late kinds. These young Vines, although so recently planted, cover the roof, and have made fine stout growth as thick as one's thumb. The foliage is also large and fine, the shoots being trained out in such a way as to give to the foliage its full share of light, sun, and air. Pot Vines have been excellent here this spring, and there are many fine bunches fully a pound weight each still to cut from them. The secret of Mr. Gilbert's success with pot Vines lies in inducing an early and vigorous growth, so that they may have plenty of time to ripen off their wood in autumn, whereby the canes get thoroughly ripened. Genial heat, good turfy loam, and plenty of good feeding in the shape of manure-water will do the rest. We have already alluded (see p. 333, Vol. IV.) to Mr. Gilbert's excellent method of growing Vines in pots for the decoration of the dinner-table, and need only now add that this season they have been as good as ever. Among pot Vines we found the new seedling, named Gilbert's Russian Emperor, which promises to be a useful black Grape for early work, a desideratum in the case of those who have to put Grapes on their employer's table every day in the year. The Vine in question, though a weakly one, has produced thirteen fine bunches this season. The latter are long and tapering, the berries being quite distinct in shape from those of the Black Hamburg, being oblate and slightly flattened at both ends, and the flesh is well flavoured and juicy. Two houses of Muscats are full of handsome clusters, varying from 1 to 3 pounds weight each. The foliage here, as elsewhere, is large and fine.

Other Fruit Houses.

Early Melons, now over, have been excellent. Mr. Gilbert is noted, not only as a good grower of Melons, but as a raiser of them, his last Hybrid Greenflesh, Lady Isabella Cecil, being one of the best in its class. Gilbert's Greenflesh is also a fine oblong deep golden fruit, beautifully netted, and possesses a fine flavour. Victory of Bath is now too well known as one of the best of Melons, either for show or table, to need any comment; this is largely grown at Burghley, where both it and Lady Isabella Cecil are great favourites. Of Pine Apples, I saw in the fruit-room some Queens which weighed from 3 pounds to over 4 pounds each; and, in addition to other fruiting and succession plants, Mr. Gilbert has just planted one pit with the newer varieties, including Thoresby Queen, a fine plump fruit (its only drawback being its small crown), and Charlotte Rothschild, one of the finest Pines grown. Smooth-leaved Cayennes and Black Jamaicas are also grown for the sake of variety. An extensive addition to the fruit-houses is about to be made in the shape of a Cherry-house, 64 feet long; and another house is to be built for Figs. In addition to these, a grand tropical fruit-house is in contemplation. When these are

built, Burghley will be one of the most extensive and complete fruit-growing establishments in the country. Strawberries in pots are nearly over, but have been very fine this season; and in one of the Pine-pits I noticed some fine Tomatoes, grown in pots with the view of ensuring a supply all through the winter and early spring, after the outdoor crop is finished. Peaches do not succeed well on open walls at Burghley; therefore, the main supply of this fruit is obtained from trees under glass. Outside, the trees suffer severely from fly and blight, although repeatedly syringed and dusted with Tobacco. There is, however, a fair sprinkling of fruit on most of them. Inside the houses, the Peach trees are in perfect health, and some trees of Royal George are bearing a splendid crop of fine fruit. In a late house of Peaches and Nectarines, the trees, planted three years ago, already cover the roof with fine wood and fresh healthy foliage. These will be invaluable as regards supplying a succession of fine fruit until late in the season.

Hardy Fruits.

This promises to be an excellent year for all kinds of out-door fruits, with the exception of Peaches, which, as previously explained, are rather thin and poor—a circumstance with which the absence of rain has doubtless much to do. Cherries, especially Morellos, on north walls are a full crop, and the trees are very healthy. I was also glad to note that there is a fair sprinkling of fruit on the Burghley Park Cherry, a variety which owes its notoriety to Mr. Gilbert's good culture. Gooseberries and Currants are laden with fine fruit, and Strawberries are also abundant. Ingram's, or the Five-leaved Pine, is much grown here, and is esteemed for its excellent colour and fine flavour. Black Prince is still one of the earliest of all Strawberries, either for out or indoor culture, its only fault being its small size. The old Grove End Scarlet is still grown here for preserving—a purpose for which it is well suited. Raspberries are trained on the arch system, a supporting upright stake being placed in the centre of each arch; and, thus managed, they bear fine crops of fruit. Prince of Wales, Mr. Gilbert says, is the best variety he has, and one which deserves to be better known than it is. Apples and Pears promise to be fair crops; and Apricots look remarkably well, the foliage being fresh and clean, and there is abundance of fruit.

The Kitchen Garden.

This is very extensive and well stocked with vegetables, in the culture of which Mr. Gilbert follows the market garden system, in which heavy manuring, deep trenching, mulching, and copious waterings play important parts. Peas are producing wonderfully fine crops, which, however, have to be closely netted in order to protect them from jackdaws, which, notwithstanding a liberal use of cartridges, are found to be very destructive. Among new varieties, Mr. Gilbert is very fond of Fillbasket, one of Mr. Laxton's latest novelties, and one which promises to be a profuse cropper; it grows about 3 feet high, and bears full-sized pods, each containing from eight to nine Peas, very sweet, and of a beautiful fresh green colour. Standard is another good dwarf Pea, although hardly so profuse a bearer as the last. William the First is one of the newer early varieties; it grows about 3 feet high and produces satisfactorily. This is a favourite, as is also another novelty named Surplanter, a dwarf variety, very sweet and good. Cauliflowers are better than might have been expected, considering the late dry weather. This year, Mr. Gilbert has tried a new plan in regard to Cauliflower culture; he plants them in a trench which has, as a matter of course, been well manured; treated in this manner, three rows being put into a broad trench slightly below the ground level, they succeed admirably. Potatoes look well; Mr. Gilbert covers the young growth with dry Fern, a plan much to be recommended in unfavourable seasons; Johnson's Premier is found to be one of the best of the early sorts, and Myatt's Ashtop, Early Handsworth, and other early varieties, are also largely grown. These are planted 3 feet apart, each way, and a mixture of sand and lime added to the ordinary soil suits them admirably, the tubers turning out clean and fresh. Mushrooms in open air beds have been very plentiful, over a bushel being, sometimes, gathered in one day, notwithstanding the late dry weather.

F. W. BURBIDGE.

THE ARBORETUM.

THE CONIFERS OF ITALY.

In all representations of Italian scenery the Stone Pine (*Pinus Pinea*) forms a conspicuous object, and it was no doubt as common in the time of the Romans as at present. Ovid describes this tree as having erect foliage, or a bristling head; Pliny says that it is branching at its top, whilst *Pinaster* is so from the middle of its trunk upwards, and that it bears at the same time fruits about to ripen, others which will ripen the next year, and others, again, which will ripen the third year. He also says it has a very large fruit, and it is, in fact, that which, among the Italian species, bears the largest cones. He says that the nuts are found in cavities, and are covered with a layer of rust, by which they are enabled to lie softly; he states, moreover, that the seeds are eatable, which is only true of this species and of *Pinus Cembra* of the Alps. The Pine was then, as now, cultivated in gardens, and Virgil calls it their most beautiful ornament; Horace, too, mentions a Pine that grew near his country house; and, according to Varro, Pines served to mark the boundaries of estates. Lastly, in Pompeii and Herculaneum, we find figures of Pine cones in drawings of fruits and of culinary substances, and also on the arabesques; in Herculaneum kernels of charred Pines have been discovered. The *Pinaster* of the ancients does not appear to be the same as that of the moderns; the former was said to be of extraordinary height, whilst the latter is almost as low as the Stone Pine. For the same reason the *Pinaster* cannot be the common *P. halepensis*, which is still lower than the Stone Pine. But this great height agrees with the *P. Laricio*, which in Corsica attains the enormous height of 140 or 150 feet, and in Sila, in Calabria, of 120 to 130 feet; but the statement that the *Pinaster* grew in the plains does not apply so well, for *P. Laricio* is a mountain tree; but Tenore says that it is occasionally found in the plains. By *Pinaster*, Pliny probably meant both *P. Pinaster* and *Laricio*, which are not very unlike one another. Pliny's *Pinaster* cannot possibly be *P. sylvestris*, for the latter is found on the Alps only at a certain height above the sea, and rarely perhaps on the northern Apennines; it is not very high.

Firs are distinguished by Pliny, and other Roman writers, into two sorts, *Abies* and *Picea*; two sorts are also found in Italy at the present day, viz., the Spruce Fir, which only occurs on the Alps, and the Silver Fir, properly so called, which is spread over the Alps and the entire chain of the Apennines. We may, therefore, look upon the *Abies* of the Romans as our Silver, and their *Picea* as our Spruce Fir. The Larch of the Romans may be looked upon as identical with our Larch. This tree was found nowhere in Italy but on the Alps. Pliny's remark, that the Larch grows in the same places as the Spruce Fir, confirms this. He also says that at Rome, a bridge, over a place where sea-fights were represented, had been burnt, and that the Emperor Tiberius ordered Larches to be felled in Rhetia, *i.e.*, in the Alps, to repair it. He afterwards notices the greatest tree that had been seen in Rome at his time; it was exhibited as a curiosity by Tiberius on this same bridge: it was kept till the building of Nero's amphitheatre; it was a trunk of a Larch 120 feet long and 2 feet thick. The localities in which the Cypress is found in Italy show that it is exotic. Pliny says that it was a foreign tree, brought from Crete, and difficult to cultivate. According to Theophrastus, the pyramidal variety of the Cypress grows in Crete, on the top of Mount Ida and the White Mountains, which are covered with eternal snow, a singular circumstance, since elsewhere it only prospers in warm countries. Near Somma, in Lombardy, there is a Cypress, which Napoleon respected when he constructed the Simplon. It is 121 feet high and 23 feet in circumference at 1 foot above the ground. This, diameter, when the very slow rate of growth of such trees is remembered, proves it to be very old. The Abbé Belèse says that, according to ancient records, this tree existed in the time of Julius Cæsar, *i.e.*, half-a-century B.C. Pliny mentions a Cypress at Rome that was thought to be as old as the city itself, and which fell in the reign of Nero. At any rate, it is certain that the cultivation of the Cypress was known in very early times. Cato and Varro say that it was



ITALIAN CONIFERS—PINUS PINEA AND THE ITALIAN CYPRESS.

planted in gardens to mark their limits. The Juniper of the ancients is the same as that of the moderns; of this there is no doubt. Ancient writers describe it as having spines instead of leaves, and as keeping its fruits all the year round, and sometimes those of the preceding year. The Juniper is said to have no flowers, and, by mistake, it has been supposed that there are two sorts—one with flowers and the other with fruits; this refers perhaps to the two sexes, which in this plant are on different individuals. The *Taxus* of the ancients is no doubt the same as our present Yew tree. Pliny mentions it at the end of his enumeration of the Conifers, and says that it resembles them; that it is the only one with berries; that it is dark, graceful, sad-looking, and without resin. In another passage, he says expressly that it is an evergreen. It was generally believed in ancient times that the Yew was poisonous. The frequent mention of the Yew by the ancients leads us to suppose that in their time as well as in our own, it grew both on the Apennines and on the Alps. The art of clipping trees and giving them all sorts of shapes was known to the Romans; but, although this was done with the Cypress, the Silver Fir, and the Box, it was not practised on the Yew, probably because the latter tree required a colder climate than the plains afforded.

There is no reason for supposing that the species of Conifers indigenous in Italy at the present time differ from those of former ages. The most common and the most easily distinguished are expressly mentioned by ancient authors, and are, for the most part, described with sufficient accuracy to enable us to determine what they really were. Those that are not mentioned may, from the vague ideas of those times, be considered as having been united to the others, or as having altogether escaped observation. Although Italy contains twenty species of Conifers (excluding the Cypress), and Europe north of the Alps has but six, the number of individual trees is by no means apportioned in the same way. The Conifers in the north of Europe form immense forests, and consequently play an important part in the general aspect of the country. In Italy, on the contrary, with the exception of the Alps, where they form by their quantity a region at the mean height, these trees constitute but small scattered woods, which give no important feature to the landscape. Along the coast of the Gulf of Genoa, as far as the Roman States, some forests of Pines peculiar to the basin of the Mediterranean are certainly found—*Pinus Pinea*, *Pinaster*, and *halepensis*; the coppices near the coast contain Junipers of the south of Europe; forests of Spruce exist in some countries of the central Apennines—for example, near Vallambrosa and Camaldoli, and generally in the upper part of Tuscany. Forests of Conifers are also met with in the Abruzzi, and on Mount Sila, in Calabria, where the Silver Fir or the Calabrian or the Corsican Pine predominate. On Etna, lastly, forests of the Corsican Pine exist: but the whole is not to be compared with the immense tracts covered by these trees in the north of Europe. It appears, then, that Italy is not very largely stocked with Conifers, and they consequently play a subordinate part in the operations of life. In the Alps exclusively do we find these trees the objects of the same industry as in the north; here they are cut down, slid over the sides of the mountains, floated down the rivers, divided in saw-mills, and sent away as trunks, beams, and planks; this work, too, is only found going on here and there, and on a comparatively small scale. In Scandinavia and northern Russia the houses are constructed almost entirely of the wood of Conifers; in central Europe this wood is also largely used for beams, floors, and staircases; in Italy, with the exception of the Alps, the houses with the staircases and floors are built of nothing but stone or brick. In the north Conifers are used for palisades, bridges, and roads; in the centre of Europe they are greatly employed for bridges, partitions, and garden palisades; but in Italy the bridges are of stone, and high walls surround the gardens. The wooden pipes for water and the piles of the north are replaced in Italy by stone aqueducts and piers. As Italy, with the exception of the Alps has but few mines, she does not, like the north, employ large quantities of Fir-wood. Genoa obtains planks for her ships from the western Alps and from Corsica; Venice and Trieste theirs from the eastern Alps; Naples has hers from Sila; Italy, however, imports pitch, tar, and other

resinous products from foreign countries; but Venice is the principal place of exportation of one of these products—Venice turpentine, which is obtained from the Larch on the high regions of the Alps. On the south slope of the Alps turpentine is also obtained from the two species of Fir; it is collected by the Italian peasants, who ascend the mountains and climb up the trees to make incisions in them. During the middle ages the Yew was very much destroyed in consequence of the great commerce made by the Venetians of its wood; for, before the discovery of powder, the Yew was in high esteem for making bows. In former times the Yew was much more common to the north of the Alps than at present.

Pinus.

P. Pinea (the Stone Pine).—This is found on the sandy coasts and hills of Tuscany, to the west of the Apennines, and on the hills of Genoa, usually accompanied by, and frequently forming forests with, the *Pinus Pinaster*. The large forest near Ravenna is, according to Bertolini, formed of this Pine; it is also found in the country about Nice. It is generally cultivated throughout the whole of Italy, from the foot of the Alps to Sicily. It is not commonly found higher than from 1,000 to 1,500 feet, but it occurs in the south of Italy as high as 2,000 feet. It is found, according to Sibthorp, on the sandy coasts of the Western Peloponnesus, in the same conditions, probably, as in the middle of Italy; it is also met with in the island of Meleida. Cultivated, it is found on all the shores of the Mediterranean.

P. sylvestris.—This tree occurs frequently in Italy on the southern slope of the Alps, from Frioul to Nice (as, for example, in the valleys of Tagliamento, Piave, on the Baldo and Legnone Mountains, in the Valteline, on the Simplan, Mont Cenis, and at the Col de Tende), especially in the sandy soil of the valleys; it is not, however, as abundant as the Spruce, Silver, or Larch Firs. As a general rule, it cannot be said to exist lower than 2,000 feet above the sea.

P. Pumilio.—This is found on the southern slope of the Alps, towards the east as well as towards the west; but the transitory forms of *Pinus sylvestris* are so common, and the distinctions between them and *P. Pumilio* so narrow when there are no cones, that I am not quite certain that some of the localities given for this do not belong to Alpine forms of *P. sylvestris*. *P. Pumilio* is found beyond the limits of trees; but scarcely higher than 7,500 feet, nor lower than 4,000 feet. It prefers a swampy soil. This species also grows on the northern slope of the Alps, and is very common on the Carpathians, where it forms a region above that of the Spruce Fir between 4,100 and 5,600 feet.

P. Laricio.—This species (the Corsican Pine) is very common on Mount Etna, where it forms woods at a height of from 4,000 to 6,000 feet. It also forms forests, according to Tenore, on the mountain of Sila, in Calabria. It was first discovered in Corsica; but it has since been found in the countries of the south of Europe; for example, on Mount Serrat, in Spain; on Mount Athos, on the Taygetus, Cyllene, and other mountains of Greece, as well as on Mount Ida in Crete, and in Phrygia.

P. Pinaster.—This species grows in the sandy plains, and on the lower mountains, on the south slope of the northern, and on the western slope of the central, Apennines. It is not found to the south of these mountains, nor before we come to the north of the Apennines.

P. halepensis.—This species is not found to the north of the Apennines; but it is very common to the east and west of these mountains, as well as in Sicily. It grows on sand and on rocks, but best on the latter; its upper limit is 2,000 feet at the outside (the Somma between Terni and Spoleto).

P. brutia.—The Calabrian Pine approaches, rather too near perhaps, *P. halepensis*; but its cones are nearly sessile, the tops of their scales rough, and its leaves are longer than those of *P. halepensis*. It grows, according to Tenore, in Calabria, especially on the Aspromonte, at a height varying from 2,400 to 3,600 feet.

P. Cembra.—This is found in the high regions of the Alps, from the Tyrol to Mont Cenis, but scattered between 4,000 and 6,500 feet. It is also found on the northern slope of the Alps, from Austria to Savoy and Dauphiné. It occurs also in the Carpathian mountains and on the Altai.

Abies.

A. excelsa.—The Spruce Fir is very common, and forms forests on the Alps from east to west. It is principally found at a height varying from 4,000 to 6,500 feet. It is found on the Euganean hills, but nowhere on the Apennines. According to Bentham it occurs on the Pyrenees; but it does not grow even on the mountains in the countries surrounding the Mediterranean. The tree found in the

north of Asia, which is somewhat analogous to *A. excelsa*, is a different species (*Picea obovata*).

A. pectinata (The Silver Fir).—This is found all over the Alps from east to west. It is principally found at a height of from 2,000 to 4,000 feet, but it occurs as low as 1,000 and as high as 4,500 feet. Like the last species, it is found on the Euganeans. It grows on the whole chain of the Apennines from north to south.

Larix.

L. europæa.—The Larch is spread over, and forms forests in, the upper regions of the Alps, from east to west. Its proper region is at a height of from 3,000 to 6,500 feet; it sometimes occurs as high as 7,000 feet, but it is then dwarf, and occasionally as low as 2,000 or even 1,500 feet (near La Piave). It is not found anywhere on the Apennines. The Siberian Larch is, according to Ledebour, another species (*Larix sibirica*).

Cupressus.

C. sempervirens.—The Cypress is found in gardens, or cemeteries, or avenues, throughout the whole of Italy, from the foot of the Alps to Calabria, as well as in Sicily; it is here and there found wild. The upper mean height at which it grows is about 2,000 or 2,500 feet. It is very common in the other countries surrounding the Mediterranean, Greece, Barbary, Africa, &c. It is supposed to be really wild in the Grecian Archipelago and in Asia Minor.

Juniperus.

J. communis.—The common Juniper occurs very generally on the Alps from east to west, from the foot to a height of 5,000 feet. It grows in a dry sandy soil, on heaths and in woods. It occurs in the whole of the north of Europe as far as Lapland. It is also found on the Pyrenees, in Spain, and in Greece, but, as it seems, only on the mountains, and, lastly, in the Caucasus.

J. nana.—This is found on the Alps, in the sub-Alpine and Alpine regions, seldom below 5,000 or above 7,500 feet, and on the Apennines. To the north of the Alps it occurs on the Carpathian mountains.

J. hemisphærica.—This is found in the upper barren region of Mount Etna, low and spreading. Its region may be fixed between 5,000 and 7,000 feet. Tenore says that it was found by Gussone on the Aspromonte, and on several of the mountains of Calabria.

J. oxycedrus.—This species is quite different from *J. macrocarpa*, with which it is often confounded. It is found on the Apennines, at a height of from 1,000 to 3,000 feet.

J. macrocarpa.—This is found on the sandy coasts and rocks of the Mediterranean, the Adriatic, and in Sicily. It occurs, too, in Greece, near Cadiz, and is probably spread over all the coasts of the Mediterranean.

J. Sabina.—The Savin is found on the Alps and on the Apennines. Some Italian botanists say that it grows on rocks near the sea; but, probably, this was *J. phœnicea*. According to Bentham, it grows on the Pyrenees.

J. phœnicea.—This is found on rocks on the shores of the Mediterranean, from Nice and Onelli to Calabria, and in Sicily; and also along the Ionian Sea and the Adriatic, from Tarentum and Gallipoli to Cherso. It is generally spread round the Mediterranean, in Greece, and its Archipelago, probably, also in the Levant.

Taxus.

T. baccata.—The Yew is occasionally found on the Alps, the mountains of Piedmont on the Apennines; it is probably not wild in the plains. Its lower limits are 1,000 feet on the Alps, and 2,000 feet on the Central Apennines; its upper limit reaches the region of the Conifers, and that of the Ash in the Apennines. It is found on the western and northern slopes of the Alps, in the mountains of Central Europe, in Scotland, and in the Scandinavian Peninsula.

[The above particulars are abstracted from Professor Schouw's paper, published in the Journal of the Royal Horticultural Society.]

The Large Beech Tree at Newbattle Abbey.—At a late meeting of the Botanical Society of Edinburgh, Sir Robert Christison gave a short notice of this remarkable tree. The trunk rises about 20 feet before giving off branches, and it then rises with a certain methodical irregularity, carrying a great girth to a great height. It is difficult to describe this upper trunk. The branches appear rather to form the trunk than to rise out of it, constituting as it were a part of the trunk some way up before taking their outward course as true branches. The extreme branches are everywhere covered with fine twigs, showing that the whole tree is healthy and thriving. During a late hurricane a huge limb was snapped off, but there are

so many more that its loss is scarcely noticed. At 2 feet from the ground the buttresses make the girth 32 feet; at 5 feet it is 21 feet; and at 7 feet, the narrowest part below the first branch, it is 18 feet in girth. The great massiveness and height of the trunk, produce a sort of oppression on the inner sense of the spectator. On the whole it is more gigantic than the Eccles Beech, chiefly, perhaps, on account of the much greater length of trunk before its first branches come off. It is undoubtedly taller, and in every way an object well worth going a long distance to visit.

Cytisus Laburnum serotinum.—Some time since, M. Carrière, in the *Revue Horticole*, drew attention to this variety of Laburnum, which he described as a remarkably handsome shrub, with unequal leaflets, frequently smaller than those of the common Laburnum, and slightly turned up at the edges. The flowers are of a fine yellow colour, very numerous, and disposed in compact clusters. They do not begin to appear until some time after the common kind has burst into bloom, and they last for some time longer; hence the specific name "*serotinum*." M. Carrière remarks that this variety is sometimes confounded with *C. L. trilobum* or *longiracemosum*, but the latter flowers earlier, and its clusters of flowers are much longer in shape and fewer in number. *C. L. serotinum* has the rare merit (as a shrub) of being a suitable and ornamental subject for flower-beds, as, no matter how much it may be cut back, or how dwarf it may be trained, it always produces a profusion of flowers.

Demand for Seeds of Famous Trees.—The demand for the seeds of the Sequoia (*Wellingtonia*) gigantea and the Eucalyptus globulus, is unprecedented. Half a million trees of the latter were sold last season in this vicinity; and nurserymen predict that the demand the ensuing season will extend to three million trees. A very large number of the other sorts of Gum trees are sold for ornamental purposes, many of them being more desirable for such purposes than the Blue Gum. There are twenty-seven varieties of the Australian Gum tree grown in this vicinity. Some of them are equal, in every quality which constitutes a good shade-tree, to any tree grown on the Pacific Coast. The seed of the Blue Gum is now retailing for about three dollars an ounce. There are about three thousand seeds in an ounce. The seed of the Sequoia gigantea retails for about the same price; and the demand at present is ahead of the supply. It is now sent all over the world. But the demand is the greatest from Australia. There is also a good demand for the seed of the Monterey Cypress. For hedges and wind-breakers nothing has yet been found in this country equal to this species of Cypress. If the tree is left to grow in its natural state it makes wood as fast as the Blue Gum.—*San Francisco Bulletin*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Coning of Araucaria imbricata.—Much has been said of late in gardening papers about this Araucaria producing cones. Our tree, which grows near the suspension bridge in the grounds here, had several cones on it last year; but I was unable to get any seed. This year it has about thirty cones on it; I therefore hope to be more fortunate.—T. CLEMENTS, *Pain's Hill, Surrey*.

Singular Effect of Eating the Berries of Rhamnus crocea.—A Transatlantic naturalist says that the red berries of this Buckthorn, which the Apache Indians eat, have a curious property. The colouring matter is taken up by the circulation, and diffused through the system, so that "the skin exhibits a beautiful red net-work."

Where can Ruscus androgynus be obtained?—Can "J. H. Q." (see p. 547, Vol. V.) tell me where I may procure this? It is a plant I have been seeking for during these last twenty years; but have never seen it offered for sale or named in any catalogue. When at Bitton gardens last summer, I noticed a thriving specimen of it out of doors, trained against the wall of the residence; Mr. Ellacombe, while courteously showing me his fine collection of herbaceous plants, told me that he obtained it from Madeira. At the same place, if I mistake not, I saw a nice tuft of *Cypripedium spectabile* in fine health.—J. M., *Huckchurch, near Lymington, Devon*.

Laburnum Fences.—How can I make an ornamental Laburnum fence similar to that in the garden of the Royal Horticultural Society at South Kensington?—D. [Plant young Laburnums in a slanting direction, about 6 inches apart, or more, if large. When you have planted one tree leaning in one direction, plant another in the opposite direction, so as to form a trellis work, and so on to the end of the hedge you wish to make. Where the trees cross each other, remove a small piece of bark from each, tie them together, and clay them as in grafting; this will cause the trees to unite, and the result will be one of the prettiest and strongest fences imaginable.—J. M.]

The Blue Gum Tree (Eucalyptus globulus).—Would this tree suit our climate? Do you believe in the properties attributed to it?—B. [The Eucalyptus will live in England in mild districts, but is liable to be cut down by severe frosts, and is much too tender for cold or northern districts. It thrives best in warm temperate regions such as California. It is certain that districts known to be malarious have been found perfectly safe since this tree has been planted in them abundantly. Whether the so-called fever-destroying property is peculiar to this tree is doubtful; it seems to us, however, fair to assume that if malaria arises from decaying vegetation over large areas of low-lying land, its antidote is likely to be found in abundance of vigorous evergreen vegetation. The Eucalyptus, moreover, is a beautiful and valuable tree in temperate countries, and well worth planting extensively, apart from sanitary reasons.—Ed.]

THE INDOOR GARDEN.

THE HUMBOLDT ORANGE LILY.

(*LILIUM HUMBOLDTI*.)

THIS is one of the most stately of Californian Lilies, growing, as it does, from 6 to 8 feet in height. It has deep glossy-green

was shown by Mr. Law, of South Lodge, Enfield, at one of the recent floral meetings at South Kensington. Mr. Tanton, of Epsom, who has kindly furnished us with the following memoranda concerning this and other species, also exhibited a fine plant of it on the 20th ult., at the Crystal Palace:—"The taste," he says, "for new Lilies being on the increase, and the kind of treatment which they require being



The Humboldt Orange Lily (*Lilium Humboldti*).

leaves, eight or nine in a whorl, and bears about the same number of large orange flowers in a somewhat lax spike. Of these our illustration furnishes a good idea as to form and markings, but not as to size; those represented being little more than half their natural size. Of this Lily, for the introduction of which we are indebted to Mr. Bull, a splendid plant

as yet ill understood, some growers complaining of their bulbs not starting, others that they split to pieces during the period of rest, a few simple instructions on such points may not be without interest. During February last I received overland from California, *Lilium Washingtonianum*, *Humboldti*, *Pardalinum*, and others; these were immediately potted

in rough turfy and very fibrous peat, loam, and leaf mould, to which was added a good proportion of washed river-sand; they were then stored away under a stage in a cool pit, and kept without water until young growths had been pushed up about 6 inches in height, when they were watered with very weak manure-water and kept still in the cool pit. All the plants of *Humboldtii*, thus treated, have flowered, and I augur for this species, both from its value as a free flowerer and from its lasting properties, a very brilliant career. The plant of it which I exhibited at the Crystal Palace on the 20th ult., had been fourteen days in bloom, and it continued in beauty up to the 30th ult. After flowering I take care to keep the leaves of all my Lilies vigorous and healthy as long as possible; when the tops have died down the bulbs are stored away quietly till December, when they are re-potted, disturbing the ball of the previous year as little as possible. This is a point of importance, for I find disturbing and uncovering the bulbs to induce them to split, to shed their scales, and to rot. This is particularly the case with the Californian species, or those which have their leaves arranged in a whorl. The beautiful *Lilium auratum*, if treated in this way, will always yield fine flowers, and permanently improve in vigour."

THE SIMPLEST WAY OF GROWING FUCHSIAS.

YOUR readers are doubtless familiar with the habit which the old *Fuchsia Riccartoni* assumes when grown out of doors in those situations where, through the severity of the winters, it is compelled to assume a semi-herbaceous habit, dying down in winter, and springing up again in summer from an annually increasing stool, until it attains the size of a goodly bush. I have often thought what magnificent specimens such plants would make if transferred to a pot, with their profusion of flowers; but how much more imposing would some of our fine cultivated varieties appear grown in the same way. Imagine a plant of a good variety grown in a 12-inch pot, and furnished, perhaps, with a hundred or more unpinched shoots 2 or 3 feet in length, and loaded with bloom—a circular ball, in fact, but graceful and perfectly free from anything like that trained formality which we too often see at exhibitions. A group of such massive specimens on an exhibition table would make the attenuated pyramids which we have hitherto been accustomed to admire to appear more attenuated still, and in a less favourable light. Not so long ago I saw a number of specimens of the kind I have described; they had not been grown for exhibition, but had simply been allowed to assume the bush habit, because the gardener had no time to attend to pinching and training; but he had succeeded nevertheless in producing a number of plants for vase, &c., work in the house such as one seldom sees. The advantages of this, which may be called the natural system, are that the plants can be grown with less than one-tenth of the labour usually bestowed upon specimens so-called, flower better, and are better suited, as a rule, for decorative purposes. It is not difficult to get up a stock of such plants. Those who have Fuchsias one year old or more, have only to cut them down to the pot, and they will break away from the bottom the first year, perhaps, only six, eight or twelve shoots, according to the age of the stool; but, in such a case, the number may be increased by pinching the shoots when they are about 2 inches in height. This will multiply them considerably, but no further stopping must be done. Plants may be cut down at any time while they have still growing vigour in them. At the end of the season the plants must be cut down again, and stored away till spring, when they should be partially shaken out, and potted at once in the pots that are to last them for the season, as, when grown in this way, any interruption of growth through "shifting on" is not desirable. The size of pot will, of course, depend upon the size of plant that is wished; the size of the specimen will be just in proportion to the root-room, and the room and light which they receive. Neat little plants, in 4 or 5-inch pots, may be had, or they may be grown much larger according to fancy or requirement.—*The Gardener*.

SIR GEORGE ROSE being introduced one day to two charming young ladies, whose names were Mary and Louisa, he instantly added, with a bow, "Ah, yes! Marie-Louise—the sweetest Pear I know;" a compliment almost worthy of being coupled with that most beautiful one of Sydney Smith, suggested by the Sweet Pea. A young lady, walking with him in the garden, paused to examine a favourite flower on which she had taken great pains. "I am afraid, Mr. Smith," she said, "that this Pea will never come to perfection." "Then allow me," taking her politely by the hand, "to lead perfection to the Pea!"

THE KITCHEN GARDEN.

BROCCOLI.

THOUGH June is the month in which most gardeners try to get their plantations of Broccoli finished, yet July has often arrived before the work is done. I have planted in August and had nice heads, but the sooner the planting is done after the beginning of June the better. Though planting early ensures the finest plants and largest heads—if very large heads are desirable—I never found the time of sowing or planting to affect the plants as regards the time they came in. I have sown at different dates, from February till the middle of April, and planted from May till August, but the crop never came in either sooner or later in consequence. I have, therefore, for many years, always sown all at the same time, and planted at the same time, for convenience sake; and, by planting a good many varieties, have always ensured a good and regular supply throughout winter and spring, when the winters were reasonably mild—for it is certain that no practice as to time of sowing or planting will ensure the heads forming at a certain time, if during winter we have protracted periods of frost or cold, during which all growth is at a standstill. It is a good plan to keep on the heels of Broccoli with the *Walcheren Cauliflower*. I have never found a variety so good as this old sort for resisting "buttoning" in dry summers and withstanding frost. I sow and plant it as late as possible, and have had it at Christmas, and later when severe frost held off.

Selection of Varieties.

The following selection of a dozen or more sorts does not include all the newest kinds, but it comprises the best of old and new, so far as my experience goes—and I have grown all the sorts named, and some of them for a long time. I give the names in the order in which they succeed one another in coming into use; Grange's Early White (an autumn variety), Early White Cape, Osborn's Winter White, Snow's Winter White (an excellent variety), Chappell's Cream, Gordon's Late White, Dilcock's Bride, Shearer's Late White, Knight's Protecting, Wilcove's Superb Late White, Carter's Champion, and Cattell's Eclipse. Some of the first named in this list come in pretty close upon one another, and are all fine sorts. The three last named are also first-rate sorts, and specially valuable on account of their lateness. Cattell's Eclipse is, I believe, the very latest. I have had it late in June, and by cutting the last heads with the leaves, and putting them in an ice-house, they will be in good condition after the summer Cauliflower has come in even in late seasons. It is advisable to plant a few good sorts, although space may be limited. A dozen rows may include a dozen different sorts, if a succession is wanted; for when one sort comes in, it is soon over.

Preparation of the Ground and Planting.

Though it is by no means an unusual thing to see nice little heads of Broccoli about the size of a teacup, or larger, in cottagers' gardens where the soil is seldom turned over more than a spade's depth, and not over liberally manured, yet the plant likes a deep and rich soil. If practicable, the ground should be trenched two or three spades deep, or at least double-dug. When there is not time for doing either of these, then the ground must be dug over a spade deep only, taking care to break the soil up thoroughly, as deeply as a good spade will do it, and working in some well-decayed manure at the same time. And here let me say a word about single digging. An indifferent man will simply shuffle over the ground, inserting his spade at an angle of 45°, and turning the soil over to a depth of about 6 inches, while a man who understands how to dig, or who is looked after and made to perform his work properly, will keep a straight and open trench, put his spade in perpendicularly, take thin spits, and turn the soil over thoroughly, breaking it well as he goes on, and do the work generally as it should be done. There is a vast difference between good and bad digging, and I never met with a labourer out of a garden who knew how to dig, however good a workman he might be in other respects. If the soil is broken up well in the trench, I never care about the surface being a little rough; a raked surface among

vegetable crops is an unmitigated evil at any time. Planting should be proceeded with as soon as the digging is finished. Here we invariably plant from 2½ to 3 feet apart, if the planting is done in June or July, and the plants are always more crowded than is desirable by October. When planting is deferred till August they need not be allowed so much room. I always like to let the same man plant the whole crop. If the weather is dry, the seed-bed is watered well the night before to soften the soil. The following day the man, armed with a big basin half filled with puddle, consisting simply of soil and water and a little soot, and a steel fork, proceeds to loosen the plants in the bed and then to pull them up with the whole of the tap root to each, and to place them with their roots in the puddle till the basin is filled. He then marks off his ground, puts his line down, and, with a dibber about 3 inches in diameter, he makes a hole deep and wide, that there may be no obstacle to getting the long tap root down straight to its extremity. Then the dibber is pushed down again just at the side of the hole and parallel, to the same depth, and squeezed up firmly to the plant. This ensures the whole of the roots being brought into contact with the soil up to the neck, instead of being "hanged;" and so the work proceeds. "Buttoned" Cauliflowers and stunted plants are in many cases caused by bad planting. They are put in with broken and mutilated roots; and those that do happen to have a tap-root most likely have it bent double in getting it into the hole, and, instead of the point being at the bottom of the hole, it will probably be sticking up above the surface. I have so often seen the consequences of careless planting, that I think it right now to draw attention to it. No one should wait on wet weather for planting Broccoli if it is long in coming; get the planting done as soon as you can, and water well once or twice, and they will do till the rain comes. True Broccoli never "buttons," let the weather be ever so dry after planting. When the plants are fairly established, and have grown a little, they must be earthed up with the hoe, more to prevent the wind from twisting them about than anything else. Towards the end of October all the plants should be partially lifted with a spade, and laid with their heads to the north, to check and harden them, in order to enable them the better to resist frost.

J. S. W.

Early Dwarf Peas.—Among these Laxton's Unique, a variety that received a first-class certificate at Chiswick in 1872, is one of the best. It originated in the same batch of seedlings as produced William the First, and is, indeed, a reproduction of that fine early kind, with this difference, that it grows only to a height of 1½ feet, whilst William the First rises up to 3 feet. Dwarf Peas are preferable to tall kinds as they can be sown in rows from 2 to 2½ feet apart, and, laid in the ordinary fashion, will yield as heavy a crop as the same sorts will if sown in rows at 3½ feet apart, and then staked, or, as can be got from tall Peas sown in rows 5 feet apart. Moreover, in small gardens, where a rapid succession of crops is of the utmost importance, a good crop of Winter Greens can be got forward early amongst dwarf laid Peas, and this result could not be obtained if they were staked. I find that our market growers are gradually getting rid of tall kinds, as they are peculiarly subject to two evils. If the season be dry, the moisture of the ground is exhausted before the crop is produced, and thus a poor one is the result; whilst, on the other hand, if it be a damp season, then so much growth is engendered that in gathering the first pickings, the haulm becomes so twisted and broken that the future crop is materially checked. Dwarf kinds are not subject to either of these evils, and the crops are gathered from them with ease and rapidity.—A. D.

Ornamental Rustic Work for the Garden.—Messrs. Cave, of 40, Wigmore Street, who are so well-known for the manufacture of plant-screens, flower-baskets, &c., for indoor decoration, have called our attention to some rustic work of distinct and novel character and much taste in workmanship. It is formed of a variety of woods, the most desirable parts for this purpose being chosen from extensive plantations, and carefully seasoned before being used. Tables, garden-seats, and large lawn flower-baskets, are manufactured of these materials; the tables being especially good in form and workmanship, and the seats and chairs also excellent. The large lawn baskets do not seem likely to be so useful, inasmuch, as if properly planted, much of the choice rustic work would be obscured by the plants.

THE PHYLLOXERA OF THE OAK.

(Discoveries of Balbiani.)

THE *Academy* contains an abstract of a paper by Professor Balbiani, detailing his observations on *Phylloxera quercus*, a species allied to the *P. vastatrix* which has occasioned such ravages among the Vines. The Vine pest can live under ground as well as in the air, and its most destructive work is performed on the roots of the plants to which it obtains access through cracks in the soil. Vines grown on clay lands are most exposed to its assaults, as they become extensively fissured in hot weather, and the best mode yet discovered of checking the mischief is by freely inundating the soil. It is, however, evident that this remedy cannot always be applied; and M. Balbiani studied the life history of *P. quercus*, in the hope that it would throw light upon the development and proceedings of its Vine relative. He tells us that somewhat late in spring the first individuals of the Oak *Phylloxera* may be seen in the shape of pale yellow larvæ on the under surface of the leaves, each one occupying the centre of a yellowish spot produced by pricking into the leaf. These larvæ grow without changing their position; and, after attaining a length of about a millimetre, they surround themselves with a number of eggs concentrically arranged. The development of these eggs commences almost as soon as they are laid; and in a few days the young escape and wander to a fresh part of the leaf, in which they plunge their sucking tubes, causing the formation of a yellow spot, which, like their parents, they never leave. Generations thus succeed generations, until the entire surface of affected leaves are covered with phylloxera of all sizes. When full-grown, M. Balbiani figures them as pear-shaped, very broad in the middle, blunt at the head, and very narrow at the posterior segments. The sucking-tube of the mouth reaches as low as the third pair of legs; and the creature, exclusive of its antennæ, looks a little more than 2 inches long when magnified fifty times. Until about the middle of August, in the climate of Paris, only wingless or larval phylloxera are produced; but, from then till the end of the month a certain number of the larvæ are transformed into winged sorts, after passing through the stage of red chrysalids; the winged form, according to Balbiani's figure, representing a magnification of fifty times, appears under that power 5 inches across from tip to tip of the larger pair of wings, the body about 2 inches long, and the sucking mouth-tube short, not reaching to the segment carrying the second pair of legs. The lower wings are much smaller than the upper ones, and each one is furnished with a small pair of hooks on the upper edges, about one-third from their tips. Hitherto no one had succeeded in discovering males of the phylloxera, and in no female organ could any spermatozoa be detected; consequently, there could be no doubt that the ordinary generations were parthenogenic. In the females on each side of the oviduct canal are two pouches, connected with glands corresponding with the usual colloid glands of insects, and supplying the substance investing their eggs. Between these is a pouch like that for receiving spermatozoa, though none have been found in any case. The question to be decided was whether, and, if so, when, the phylloxera, like the aphids, produced males and the females laid fecundated eggs. On examining the individuals destined to be transformed into winged insects, no external character differentiated them from the wingless generations; but an examination of internal organs showed their reproductive apparatus to be slightly developed. Thus, while the egg-laying larvæ contained a variable number of eggs more or less matured, these individuals only contained eggs so slightly developed as to be little distinguished from the other contents of the ovary. It was observed that the winged insects did not remain on the leaves longer than was necessary for the hardening of their integuments, and very seldom laid eggs upon them. In calm weather they remained longer than when it was windy, confirming the remarks made by naturalists concerning other insects, and notably by Morren with regard to aphides, that they availed themselves of air currents to help their flight. But when did they go, and where deposit their eggs? In September M. Balbiani placed some twenty winged females in a bottle with a fresh Oak leaf, in which they thrust their sucking tubes without delay. The next day, however, some were uneasy and moved about, depositing here and there an egg. Others, after wandering about, returned to their first place, and laid their eggs in a heap, and others, again, left the leaf altogether, and laid an egg here and there on the sides of the bottle. In two days all had finished laying, and soon after they died. The eggs were alike in shape, but some were twice as big as others. When the hatching came the small eggs produced small red larvæ, and the big ones large yellow ones—the small being the males, and the larger ones the true females of the species. M. Balbiani subsequently found that the winged sorts laid their eggs among the old scales at the base of the new shoots of the trees, and that they were hatched in about twelve days; and now comes the most curious part of his discoveries; both males and

females from their eggs were destitute of alimentary and digestive organs, as male rotifers have long been known to be. They have no suctorial mouths, no stomachs, &c., but their reproductive apparatus is highly developed, and they spend their short lives in the formation of fecundated eggs. The ovary of these females is much simpler than in the parthenogenetic forms; instead of two ovaries, each with from two to six ovigerous tubes, there is a single tube in the middle of the body. These females lay only one egg in fissures and cracks of the Oak bark; it is a "winter egg," neither like the egg of the parthenogenetic females, or those of the winged insects. April is the time for hatching these winter eggs. The first generation thus produced is extremely fertile, one of them being seen on April 25th with eighty-seven eggs, which, in two or three days, were increased to more than 100. In the summer, these females are less prolific, the ovarian tubes diminishing in number until at last only one is found. Thus the vital energies of the parthenogenetic females become exhausted, and the reappearance of the males is requisite for the continuance of the race.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

THE staking and tying up of climbers and the pegging down of dwarf-growing plants are operations which will require constant attention. Although we have of late been favoured with refreshing rainfalls, fine foliaged, or what are known as sub-tropical, plants should still be supplied with abundance of water, and the surface of the beds should be well mulched with good rich manure, to check evaporation, and assist in the production of a fine healthy luxuriant leafage, which constitutes the principal beauty and attraction of such plants. The unsightliness of the manure may be easily concealed by the mowings of lawns, and the margins of the beds should be neatly covered with green Moss, which the occasional waterings will keep in good condition. Wherever carpet-bedding is practised this must also have constant attention in the way of pinching in, and regulating the growth of the various plants employed for that purpose, so as to preserve the outlines and patterns of the beds. Let decaying blooms of Roses be cut off as soon as the petals have fallen, or are about to do so. The autumn flowering kinds may now be cut slightly back, and if the plants are encouraged by mulching and watering with well-diluted liquid manure, and at the same time kept free from insects and mildew, an abundant supply of blooms may be reasonably expected during the month of September, and even the early part of the following month. The present is also the most suitable time for budding Roses on the Briar-stock, an operation which should, if possible, be completed during this month. All flowering shrubs, as soon as they go out of bloom, should have dead and decaying flowers removed; and, when necessary, the plants should be cut back. Box edgings may also now be trimmed; and wherever divisional lines are formed by means of Sweet Briar or the common evergreen Privet, they should also now be cut. Few plants are better suited for forming low ornamental hedges than the Privet; but, being of free growth, it requires to be clipped several times during the season. The common Yew (*Taxus baccata*) is also an excellent hedge-plant; but it is of slow growth. There are, however, several other hardy Coniferous trees to which this objection does not apply, such as *Cupressus Lawsoniana*, *Thuja Lobbi*, *Thujopsis borealis*, &c., all of which are well suited for ornamental hedges or screens. Where such already exist the present is the most suitable time for cutting or rather clipping them. But, when such hedges or screens consist of large-leaved plants, such as the common or Portugal Laurel, it is then advisable to prune with the knife, in order to avoid, as much as possible, the mutilation of the leaves. Dwarf Coniferous trees, and ornamental shrubs of various sorts, are frequently used in the embellishment of Italian and geometrical gardens; and, where that is the case, it is generally necessary to preserve a certain amount of uniformity as regards shape and size; and the present is a suitable time to attend to the cutting or trimming of such specimens. Among plants well suited for this purpose are the Sweet Bay, the Portugal Laurel, the *Laurustinus*, &c., trained in the form of standards or otherwise, together with various sorts of Cypresses and Junipers, and other plants of a drooping habit of growth; also the Irish Yew (*Taxus fastigiata*), generally trained in the form of pyramids, and on which are sometimes grafted the gold and silver striped varieties of the *Taxus baccata* or common Yew, a union which produces a very striking effect, as do also trained specimens of the fine-foliaged *Acer Negundo variegatum*, which, although deciduous, produces, nevertheless, during the summer months a very pleasing contrast when associated with sombre or

dark-foliaged plants. Continue to extract Plantains and other broad-leaved plants from lawns, and occasionally take an opportunity, after a considerable rainfall, to well roll all dressed ground. This will, however, seldom be necessary where a heavy horse machine is used; and, where that is employed, avoid, by all means, a too close approach to fine specimen Coniferous or other trees upon the lawn. Whatever portion of surface the mowing machine may not have reached should be neatly cut with the scythe on the following morning; and, at the same time, the margins of walks and clumps should be trimmed or clipped with the grass-edging shears, an operation quite indispensable to neatness and high keeping. Carnations and Cloves may now be layered, and cuttings of Pinks and Picotees may be inserted in a mixture of sand and finely-sifted leaf soil under hand-glasses, which should be placed on the north side of a wall, together with cuttings of any hardy herbaceous plants which it may be desirable to increase. In layering Carnations, Picotees, or Pinks, first prepare some soil, consisting of two-thirds loam, one-third well-decayed and finely-sifted manure or leaf-mould, and add to the whole a sixth of sand; then remove a little of the surface soil from around each stool, cut away weakly shoots, and strip the leaves from a portion of the stem next the ground. With a sharp thin-bladed knife, split up the portion of the stem cleared of leaves, beginning a little below one of the joints; and turning the top of the layer upwards, so as to throw the heel or tongue downwards, fix it firmly in the fresh soil by means of a wooden peg, putting it into the ground below the split portion of the stem. When all the layers of each stool are layered, place as much of the prepared soil firmly round the stool and about the stems as will keep all steady and firmly in their places; give a good watering through a rose, and keep them watered at least three times a week should the season be dry. At the time of layering remove all stems from which the flowers have faded or been gathered. Should birds prove troublesome, as they frequently do in dry weather, by scraping about them and scattering the fresh moist soil, it is a good plan to place some flints or round stones about the plants; this keeps birds from removing the soil, and prevents evaporation.—P. GRIEVE, *Culford, Bury St. Edmund's*.

Indoor Plant Department.

Conservatories should now be gay with Balsams, which should be liberally supplied with manure-water; in order to secure a succession of blooming plants, some should have all their flower-buds removed until about four or five weeks before they are required for use. Young Fuchsias should now be full of flower, as should also older plants of them trained to rafters in the form of climbers; these should be well attended to as regards thinning and watering. It is considered to be bad practice to thin out too much of the wood at any one time; on the contrary, they should be gone over frequently, and as they always emit flower-buds at the joints as they advance in growth, shoots that attain too great a length should be removed, giving such as remain a better chance to furnish fine flowers. Pelargoniums will now, for the most part, be done flowering, with the exception of zonal kinds, which should be encouraged. Annuals of April and May sowings should now be in full bloom. Coleuses should also now be very effective; these are always best when produced from early spring cuttings; a few old plants only should be retained through the winter, in order to furnish cuttings late in February and March. Coleuses, when bushy and well-grown, make charming vase plants, edged with *Tropæolums*, Ivy-leaved *Geraniums*, *Aschy-nanthuses*, *Hoyas*, *Convolvulus mauritanicus*, variegated *Panicum*, &c. Amongst the best kinds of Coleus are Queen Victoria, Duke of Edinburgh, Princess Royal, Marshallii, Bausei, Prince Arthur, Beauty of St. John's Wood, Golden Gem, Hector, Wilsonii, Reevesii, and Telfordii aureus. Plumbago capensis should now or very soon be one of our finest greenhouse plants, both in the shrub form and that of a climber. Camellias planted in borders should be syringed daily in warm weather. In order to give a little floral relief, pots of Japan Lilies, such as *speciosum*, *roseum*, and *punctatum*, should be placed here and there, when they come into bloom, among the Acacias, Camellias, &c. These Lilies should be top-dressed with rough lumpy loam and manure. Lilies in pots that have done blooming should be laid on their sides against a wall or fence, in such a manner as to prevent rain from reaching them. Specimen Azaleas should, if possible, have a house to themselves, in which they can be placed near the glass. Hard-wooded greenhouse plants, such as Heaths, Epacris, and many others, may now or soon be set out of doors on beds of ashes, and carefully watered; the ground about them should also be well saturated at least twice a day in bright weather. In stoves, Allamandas, Bougainvilleas, Clerodendrons, and Stephanotis will be blooming freely, and when allowed to ramble over a trellis on the roof they have a much finer appearance than when trained on

pot trellises, as seen at exhibitions. Stoves at this season are not generally very gay, the principal flowering plants in them being *Ixoras*, *Gloxinias*, *Gloriosas*, *Gesneras*, *Strelitzias*, and a few others. *Marantas* growing freely, if likely to become pot-bound, should be again re-potted; plants of *Cyanophyllum magnificum*, when growing freely, should likewise be shifted a second time, using for the purpose good yellow loam, a little peat, decayed hot-bed manure, and white sand. *Caladiums* should be tied and trained rather openly, so as to permit young leaves free development. *Sonerilas*, *Bertolonias*, and similar fine-leaved plants, are much more highly coloured when grown under bell-glasses perforated at the top, and otherwise treated like *Anæctochilus*, than when grown in pots unprotected.

Orchids.

Lælias, small *Cattleyas*, *Barkerias* and other Orchids on blocks, or in hanging baskets require very careful attention, especially during hot sunny weather. It must be remembered too, that plants suspended at the highest points in the house, viz., immediately under the glass, are frequently in a temperature 8° or 10° higher than those placed on the stages and side benches, and that they, moreover, receive more light; circumstances which, combined, render it necessary to keep them supplied with regular and copious moisture at the root; such plants also generally have less absorbent compost round their roots than others differently circumstanced, and this is another reason why they should be syringed or dipped into water more frequently than plants in pots, and in a moist compost. The cause of many amateur cultivators failing to grow epiphytal Orchids on blocks, or rafts of teak, as well as in pots may generally be traced to irregularity in watering, or lack of moisture at the root. Autumnal flowering *Lælias* grow best without much *Sphagnum* around their roots; I have, however, grown them on earthenware blocks modelled from natural branches, with success. These are hollow and perforated with circular holes at the side. In order to keep them perpetually moist they should be filled with fresh *Sphagnum*, and saturated with tepid water every morning. After the plants have made their growth, and during dull wintry weather, when they must be kept comparatively dry at the root, the Moss may be removed, for, if left when dry, it only serves to harbour cockroaches, wood-lice, and other vermin. Cool Orchids making growth must be liberally supplied with moisture and those in flower may be removed to the conservatory, or even a sitting-room, without injury. Small or delicate plants should be covered with a glass shade which, while it effectually obviates dryness, cold draughts or sudden fluctuations of temperature allows the beauty of the plants to be seen equally well as if wholly exposed. Indeed I often think that glowing colours and fresh foliage look richer under glass shades than when not so protected; nor do I stand alone in this matter, for our principal nurserymen frequently adopt the practice of placing delicate plants under glass at exhibitions.—F. W. BURBIDGE.

Hardy Flowers.

These have improved wonderfully during the past fortnight, many of the stronger growing perennials having made such growths as to render tying and staking constantly necessary. Cuttings of plants which it may be desirable to increase, should now be taken off and struck. Some kinds, such as *Pentstemons*, *Iberises*, &c., may also now be layered as soon as possible. Any new plants recently received should, if practicable, be divided into as many pieces as possible, and re-planted, giving them at the time a good watering. Seedling perennials in pots, sufficiently strong to bear pricking off, should receive attention; while plants from early cuttings, which have now become well-rooted, should be potted off into what are called thumb-pots. Further sowings of annuals for late flowering may still be made, and newly gathered seeds of choice perennials should be sown at once. Hardy annuals and biennials are now in perfection, and any of these requiring stakes should be accommodated with them for protection against strong winds. Conspicuous among plants now in bloom are the different kinds of *Lilies*, which vary in colour from the pure white of the old-fashioned *Lilium candidum* to the deep orange-yellow of *L. Thunbergianum*. Various forms of the beautiful *L. auratum* are also highly attractive in many places, and so are the flowers of *L. Humboldti*, *Brownii*, and *longiflorum*, in large collections. Several plants of the Composite family are, likewise, now very ornamental, particularly the tall-growing *Achillea filipendulina*, with its large flat heads of yellow flowers; also several of the *Gaillardias* with rich orange-yellow flowers, and *Coreopsis auriculata*, the blooms of which are of a clear golden-yellow, and produced in abundance. The old Everlasting Pea is likewise now in perfection in many places, and associated with it should be the white flowered form of that species. *Lychnis chalcidonica*, a very old garden favourite, is now producing clusters of bright scarlet flowers, and the large and handsome blooms of various hybrid forms of *L. Bungeana*, are at present strikingly conspicuous. Of the Sage family several

are flowering freely, among which I would particularly mention *Salvia chionantha*, a plant well worthy of more general cultivation than it receives. It grows from 3 to 4 feet in height and bears an abundance of large showy white flowers. Day Lilies (*Hemerocallises*) are now at their best, and the blooms of *Alstroemeria aurantiaca* are also just now very conspicuous, as are likewise those of various *Larkspurs*, both single and double; and several kinds of *Monkshoods*. Among annuals and biennials now conspicuously in flower are the different varieties of *Clarkia pulchella*, and the Corn-flower (*Centaurea Cyanus*) so useful in a cut state. The Canterbury Bell, one of the best of biennials is also nicely in flower, particularly the variety of it called *Campanula Medium calycanthema*, an excellent kind.—T. SPANSWICK.

Hardy Fruits.

Should the weather prove dry, or the soil be thin and porous, few operations tell so well on the finishing of superior fruits, as mulching the surface of wall and other tree borders, and giving them a thorough soaking with water. So much has been said in favour of a dry atmosphere for the perfect finishing of fruits, that many have carried the dry theory down to the roots likewise, and with the most disastrous results. Even the importance of a dry atmosphere has been much exaggerated. Seldom have I gathered finer flavoured Peaches than in a dripping autumn, or in that particular condition of the atmosphere when heavy dews have wetted the fruit almost as thoroughly as a shower of rain. As for dryness at the roots, it is injurious, not helpful, to the perfect maturation of good fruit. Of course, the term is very indefinite, and a swamp is even worse for the ripening of fruit than a Sahara. But the root-run should be moist, not dry, if fruit is to be obtained in perfect condition as to size and quality. Lacking rain, an occasional syringing over head with the garden engine, will cleanse the leaves, invigorate the trees, and benefit the fruit up to the time when it begins to swell; beyond that period all artificial means of adding to the water supply should cease. A thorough soaking of sewage now, followed by a mulching of 6 inches in thickness of manure, will probably carry the crops of wall trees safely through. See at once to the netting up of late Strawberries and Cherries. In regard to the latter it is a good plan not to nail in the breast wood until the fruit is gathered. Thin it as much as is necessary, and then leave the young wood of Morellos or any shoots that may be needed to make blanks good in other varieties as it grew. These young shoots keep the nets off the trees, and prevent the birds from reaching the fruit. The wood, too, ripens better in this way than when trained in close to the wall. Even the shade afforded by the leaves seems to be useful for the Cherries. Some fruits (and, especially, perhaps, Grapes and Cherries) ripen better in partial shade than when fully exposed to the sun. Hence a good many of the failures of cultivators, and among them the scalding and semi-roasting, and hardening of the substance of fruits, arise from the reckless denudation of trees of branches and leaves, thus unnaturally exposing the fruit, in full growth, to an excess of direct sun-light. The breast wood in Apples, Pears, Plums, Gooseberries, and Cherries should soon be stopped. Those who only stop such wood in the growing season may now do so without fear of exciting the buds, left at the base, into a premature and useless growth of wood. The object of these stoppings is twofold, to allow more light and air to play around the fruit, and to develop the buds at the base of the current year's wood into fruit buds. A third reason is to bring more light to bear upon the spurs that form on the branches of Apples, Pears, Plums, and Apricots in other places than at the base of the current year's shoots. Notwithstanding what has been said about the injurious effects of an excess of direct sunshine, doubtless a considerable amount of light is essential to the full development of the flavour of fruit, and one great object of summer pruning is to hit off the happy mean between a deficiency and an excess. The other use of summer pruning (the development of the small buds at the base of breast wood into fruit buds) is a matter of everyday experience. It can only, however, be done successfully by timing the stopping aright. If done too soon the buds will break with useless wood; if too late, the sun will not have time to round them off and fill them up with the plumpness of fruit-bearing buds. Light is also essential to the plumping out of the clusters of spurs that nestle in groups on the branches of Apples, Pears, &c. If these are densely shaded after July they will remain long and thin, and only yield a cluster of useless leaves. If well sunned, almost each of them will be browned, and plump out with a promising fruit bud. Therefore see that they are now nourished by the sunlight and strengthened by a play of free air around them.—D. T. FISH.

Kitchen Garden.

The drought in this part of the Midlands is becoming more intensified; much care and forethought will, therefore, be necessary to keep up the different successional crops. The water supply in many

gardens is often deficient, and, even where the supply is abundant, its distribution by manual labour is a heavy task in dry seasons. When a supply of water can be obtained from a source which gives sufficient pressure, it will be found, in the long run, good practice to have pipes laid about the garden, with plugs at intervals to which one or more lengths of hose could be attached for its distribution. By this means one or two men, in a given time, would do far more watering than a dozen could accomplish in the ordinary way, *i.e.*, if the water had to be carried any distance, without taking into consideration the injury that is often done by so much trampling of feet. Advantage should be taken of the present dry weather to secure a good stock of the various kinds of herbs for drying for winter use. If tied up in small bunches and suspended from beams or rafters in a dry airy shed, they will dry gradually and without loss of strength or flavour. Cut down a portion of the Mint bed to produce fresh young growth for late summer and autumn use. Peas of the Ring-leader section may now be sown, but the ground selected for them must be in good condition, and the trenches flooded with water before sowing. This is also the best time for making a large sowing of Turnips for autumn and winter use. The Red Stone should be the principal variety relied upon. Plant out Cauliflowers from the May sowings for autumn use, and, where the ground is not sufficiently rich for this crop, the following plan may be adopted with advantage: Make holes 1 foot square and 15 inches deep, 2 feet apart all over the space intended to be planted, put into each hole two spadeful of rotten manure, and return the soil, leaving, at the same time, a basin or hollow space in the centre, in which the plant should be set and well watered in, and, if dry weather continues, mulching should be had recourse to, to keep the earth cool and moist; of course, in deep rich land this mode of concentrating the manure for any particular crop may be unnecessary; but, in all doubtful cases, a little extra pains, in this way, especially in a season like the present, renders less after labour in watering, necessary. Box edgings have made but little growth this season, but advantage should be taken of showery weather, when it occurs, to have them cut and the walks well rolled.—E. HONDAY.

Cottagers Gardens.

These should now be about at their best, and every inch of space occupied. As Potatoes and other early crops are cleared off, the ground should be immediately occupied with Broccoli, Winter Greens, Celery, and Turnips in quantities proportioned to the consumption. All hedges about such gardens should now be pruned, and the walks, narrow though they may be, should be kept scrupulously clean. Climbing plants on walls should now be slightly pruned and young growths nailed in. The flower borders, if any, should be gay with herbaceous plants, annuals, and a few of what are called bedding plants to give colour in autumn. Window plants should receive daily attention as to watering and removing decayed leaves, and a reserve of such plants should be kept constantly in readiness to succeed such as are past their best. Calceolarias, now nearly over, should be succeeded by Fuchsias, Geraniums, Balsams, and fine-foliaged plants, and the aim should be not a feast of bloom one week and a fast the next, but a gradual change, so that the seasons may be linked together in floral beauty. All crowding of plants should be avoided, as it is only by allowing room that individual beauty and effect can be obtained.—JAMES GROOM.

PRECAUTIONS AGAINST A DEFICIENT WATER SUPPLY.

THE Local Government Board have issued the following circular to the sanitary authorities throughout the country, urging the taking of precautions against a probable deficient supply of water from the long continued drought:—"Sir,—I am directed by the local Government Board to state, that in consequence of the long continuance of dry weather, their attention has been drawn to the fact that in several parts of the country the ordinary water supply has become considerably diminished, and there is reason to be apprehensive that, as the summer advances, the evils arising from this cause will be much more seriously and extensively felt. Among such evils must be included the very serious danger to health which will arise if, for want of a better supply, recourse is had to polluted water. Under these circumstances, the Board think it right to point out to the sanitary authority the importance of taking steps to inform themselves fully of the nature and extent of the existing water supply in the several parts of their district, and the sources which may properly be relied upon for the purpose of supplying any present or prospective deficiency. The Board need scarcely remind the sanitary authority that one of the chief duties which the Legislature has imposed upon them is that of providing their district with a sufficient supply of water, and the Board cannot too strongly impress upon

them the expediency, at the present time, of adopting every available precaution for the storage of wholesome water in those localities which are like to suffer from drought. With this view it is desirable that the sanitary authority should make a careful examination of the existing sources of supply, so that they may, as far as practicable, be economised, and that steps may be taken, where necessary, to obtain an additional supply. If any part of the district is within the limits of a water company, the attention of the company should, with the like object, be directed to the points lastly referred to. The sanitary authority are aware that, if there is no such company, they themselves may not only construct and maintain water-works, but also dig wells, and do any other acts necessary for providing a water supply for their district. It is, therefore, competent for them, in case of need, to provide, by means of water-carts and other like expedients, a temporary supply for domestic use, and for flushing sewers and drains; and the cost attendant upon the adoption of this suggestion, which would be comparatively small, might be wholly or in part reimbursed by a moderate charge for the accommodation. I am directed to add that the greatest care must, of course, be taken with regard to the purity of the water which the sanitary authority distribute; that no supply should be used which is not perfectly safe from pollution by excremental matters or other filth; and that other impurities, if the water contains such, should be removed from it by filtration or otherwise, before it is delivered for domestic use.—I am, Sir, your obedient servant,

"Whitehall, June 29, 1874.

JOHN LAMBERT."

EDINBURGH BOTANICAL CLUB.

THE following is an extract from verses submitted to the members of this club at their meeting at Easter Duddingston Lodge, on 3rd July, 1874:—

Of the heavens and their changes but little we know,
Though much they affect us poor mortals below.
If our sun, as averred, be a changeable star,
As some orbs in far space most undoubtedly are,
Then changes may follow on earth, air, and sky,
And the plants of our planet be affected thereby.
Change, change, nothing but change.

McNab was the first men's attention to draw
To the baleful effects of some unobserved law—
In the fruits that once ripened, but ripen no more
In our northern climate. Whereas we had store
Of Ribstons, Greengages, Figs, Peaches, and Pears,
All matured in the open in long bygone years,
Which with fifty things more I can't specify here,
Were brought to our markets and shows year by year;
But now, tho' we pettle such things on the wall,
'Tis rarely we get one ripe fruit after all.
As of fruits, so of vegetables, *ex gratia*, Tomatoes,
Once reared in the border as we still do Potatoes,
Have, with Mushrooms and Capsicums all out of order,
Bid Scotland good-bye, and passed over the Border.
Change, change, nothing but change.

On facts such as these McNab took his position,
And proved our poor climate in a back-going condition.
Now, facts being stubborn, with so many to back him,
He feared not, and cared not, who'er might attack him,
While an editor high, both on gardening and climate,
And on all cognate subjects acknowledged as Primate,
Held the case as made out by facts *ad gaborem*,
With a surplus to spare of those put before him.
Then Naudin struck in with evidence clear,
That like changes in France were experienced as here.
Yet with many concurrents, it may not be denied,
There was something to say on the opposite side;
And a chap singing "Frutex" made a very fair case,
On the tables of Chiswick in the main for his base;
But whether by these or the cycles of Schwab,
He failed, to my thinking, to damage McNab;
For cycles no longer than Schwab's in duration,
Are wholly inadequate for the occasion.

I. A. HENRY.

The Neglected Squares of London.—When we think how much good Mr. Grant's gift must do, and how much innocent pleasure he will have given, all that surprises us is that he has not long ago been anticipated. There must be many millionaires more or less connected with London, accumulating wealth even beyond their ambition, who must be casting about for means of disposing of their superfluity, and would not be sorry to raise monuments to their own memories. Many of them who profess philanthropy can find no better outlet for it than the application of their spare riches to those questionable schemes which tend to foster poverty, or at

least to discourage independence. Why should they not follow Mr. Grant's very sensible example—bestow a gift that can by no possibility be abused, and enjoy the pleasure of their own good deeds in their lifetime? But, besides these, there are other men, of still better ascertained means, upon whom such an obligation more naturally falls. There are great landlords, owners of whole districts, who administer, through a machinery of agents, blocks of house property of every class. They draw enormous revenues in a shape which absolves them in a great measure from the responsibilities they would incur were their property situated in country parishes. There can be no immediate intercourse between them and the occupants of their houses. In the way of charity they have no direct dealings, except with rectors, curates, or churchwardens; and the bounty they distribute is entirely at their own discretion. But they owe a duty, as citizens of no mean city, to the great source of their revenues. Mr. Grant has anticipated in Leicester Square the owners of ancestral domains; but there are many other places in London which may be dealt with at once, without costly and complicated law proceedings.

Leached Wood-Ashes.—Some valuable observations on the fertilising action of leached wood-ashes are contained in the annual report made by Professor S. W. Johnson to the Connecticut State Board of Agriculture. Analyses of four samples lead Professor Johnson to the conclusion that the chief fertilising element in leached ashes is carbonate of lime. The specimens examined contained from 38 to 53 per cent. of this substance. The proportion of water in leached ashes is as large as 35 per cent. When unadulterated, the quantity of sand or soil and unburned coal which they contain varies from 6 to 15 per cent. As the benefit derived from their application to land is often attributed to potash, it is interesting to learn that they seldom contain more than 1 per cent. of potash.

Effects of Storms on Vegetation.—A storm of unusual severity visited the north of Italy and the south and east of France a few days ago. A letter from Antibes, in the *Dibats*, states that the thunder and lightning in that district were terrific, and that the hail was driven by the wind with such force that the leaves of the trees were riddled or torn to shreds, leaving nothing but naked branches. Figs, Vines, Olives, and other fruit trees were ravaged, and some were torn up by the roots. People on the roads were felled and vehicles overturned. The hurricane did not keep a straight route, but was influenced by the currents formed in mountain gorges and in the valleys, and wheeled about, carrying ruin wherever it went. At Tarbes the hail had to be removed in shovelfuls from the foot pavements, and round Montpellier the Cornfields were almost destroyed.

Vegetable Wax.—This was the subject of a paper read before the Natural Science and Statistical Society of Eastern Asia, at Yeddo, Japan, on Dec. 6th, 1873. The delivery of the paper was accompanied by an exhibition of specimens of the material in different stages of preparation. The wax tree is in appearance not unlike our Mountain Ash, and the Bean-shaped berries, in size about that of Lentils, are gathered in the month of October. After being softened by the action of steam, to which they are exposed in stone receptacles, the berries are pressed, and the wax obtained. The substance is then purified by boiling, first in lye, and then in pure water, after which it is bleached in the sun for about fifteen days, in which latter process it becomes white, and is ready for use or for exportation. The vegetable wax, thus prepared, is scarcely distinguishable—except by a tallow-like odour—from beeswax, and is exported from Japan to England in considerable quantities.

The new Substitute for Flax.—Can you inform us what this American Wood Nettle is, that we hear of as a substitute for Flax, which a Mr. Roezl discovered in America and has introduced into Germany? What is the sense of our introducing Ramie from China if we have something as good, or better, at home?—*TEXTILIS*. [It is an old affair come up again, and it remains to be seen whether anything will come of it. About fifty years ago a clever Irishman, named Whitlow, finding that our wild Wood Nettle (*Laportea canadensis*), had a good deal of strong fibre in its bark, took some roots back to Ireland and England, introduced it as a new species under the name of *Urtica Whitlowii*, and vaunted its merits as a substitute for Flax. For some reason or other it did not succeed. Lately it has been taken up anew by a very enterprising German explorer and collector, Mr. Roezl. He has taken the same plant to France and Germany, under a new name, this time *Laportea pustulata*. And it really appears that our Nettle “is attracting considerable attention in Germany for textile purposes.” It is said that the trials that have been made of it under the direction of the Prussian Minister of Agriculture gave favourable results. The advantages claimed for it are, that being a hardy perennial it is not necessary to sow the seed year after year; and that the fibre is extracted from the stalks with much less labour and cost than is required in the case of Flax and Hemp. We can only say that the fibre of the bark, which is good

and abundant in Nettles generally, is particularly fine and strong in this species; while all the central part of the stem is tender and succulent, and therefore probably easily got rid of by maceration or mechanical means. The question whether it will pay to cultivate Nettles and extract the fibre is entirely a practical one. As the Nettle in question grows in woods and damp shady places, it may be doubted if it will thrive in open and dry fields. But it grows very well in good garden soil, as we have occasion to know. Flax, however, has held the ground for several thousand years, and it is much to be doubted if it now finds a rival.—*ASA GRAY, in The Tribune.*]

THE HOUSEHOLD.

Leaves for Flavoursing.—With the exception of sweet and bitter Herbs, grown chiefly for the purpose, and Parsley, which is neither bitter nor sweet, but the most popular of all flavouring plants, comparatively few other leaves are used. Perhaps I ought also to except the Sweet Bay, which is popular in rice and other puddings, and certainly imparts one of the most pleasant and exquisite flavours; but, on the other hand, what a waste there is of the flavouring properties of Peach, Almond, and Laurel leaves, so richly charged with the essence of bitter Almonds, so much used in most kitchens! Of course such leaves must be used with caution, but so must the spirit as well. An infusion of these could readily be made, either green or dry, and a tea or table spoonful of the flavouring liquid used. One of the most useful and harmless of all leaves for flavouring is that of the common Syringa. When Cucumbers are scarce, these are a perfect substitute in salads or anything in which that flavour is desired. The taste is not only like that of Cucumbers, but identical—a curious instance of the correlation of flavours in widely different families. Again, the young leaves of Cucumbers have a striking likeness in the way of flavour to that of the fruit. The same may be affirmed of Carrot-tops, which are as like Carrots in taste as may be. In most gardens there is a prodigious waste of Celery flavour in the sacrifice of the external leaves and their partially blanched foot-stalks. Scores of sticks of Celery are cut up into soup, when the outsides would flavour it equally well or better. The young leaves of Gooseberries added to bottled fruit give a fresher flavour and a greener colour to pies and tarts. The leaves of the flowering Currant give a sort of intermediate flavour between Black Currants and Red. Orange, Citron, and Lemon leaves impart a flavouring equal to that of the fruit and rind combined, and some, what different from both. A few leaves added to pies, or boiled in the milk used to bake with rice, or formed into crusts or paste, impart an admirable and almost inimitable bouquet. In short, leaves are not half so much used for seasoning purposes as they might be.—*P. L. SIMMONDS.*

Blancmange and Apricots.—A pint of milk, a pint of cream, half an ounce of isinglass melted with a little boiling water, four ounces of loaf sugar, three Bay leaves bruised, a stick of cinnamon broken, a tin of preserved Apricots or Apricot jam; boil the milk, sugar, cinnamon, and leaves together for ten minutes; put it into the cold milk; then strain it; add the isinglass, and let it boil up; then the cream; let it boil for five minutes. Strain it into a basin; stir it till only lukewarm. Add three table-spoonfuls of brandy. Stir it well, and pour it into a wetted mould. Let it stand in a cold place eight hours.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

A Novel Way of Preserving Onions.—Mr. Baines, of Southgate House Gardens, stores his Onions in an uncommon way. They are nailed in bundles on the outside of his house: and, in this way, slightly protected from wet by the eaves, they keep, on an average, five weeks longer than those of the same varieties and of the same crop, stored in the ordinary manner. Mr. Baines says this is the mode adopted by the Cheshire market gardeners.

Dandelion Salad.—The French are so enthusiastic over this salad that great pains have been taken to improve the varieties of Dandelion, some of which we have imported into this country. The Dandelion requires a thorough blanching to deprive it of its bitterness. It can easily be grown at a low temperature, and when properly cultivated it is said to produce white leaves as crisp and nutty as the finest white solid Celery. Two varieties are highly praised in the French papers—one, which has a full round head, like a small Cabbage, and another which has long, broad, Lettuce-like leaves.

Coffee as a Disinfectant.—Roasted coffee, says the *Homeopathic World*, is one of the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. In proof of this, the statement is made that a room, in which meat in an advanced degree of decomposition had been kept for some time, was instantly deprived of all smell on an open coffee roaster being carried through it, containing 1 lb. of newly roasted coffee. Does not this suggest the advisability of keeping our coffee canisters constantly corked? Of course, such as is used for disinfecting purposes would be destroyed.

SOCIETIES AND EXHIBITIONS.

EVENING FETE AT THE ROYAL BOTANIC GARDENS.

ON Wednesday evening last a grand *fête* was given by the President and the Council of the Royal Botanic Society in their gardens in the Regent's Park. This *fête* may now be fairly considered to be one of the settled events of the London season, as it certainly is one of the most pleasant of them. As a rule, people are pretty safe, as far as the weather is concerned, in fixing July for open air festivities; but, with the experience of the last few weeks, and with the recollection of the manner in which their first *fête* was interrupted by a violent thunderstorm, the Council have been kept in a state of great anxiety as to whether or not a similar disaster awaited them on this occasion. Fortunately for them and for their guests, the weather proved simply delightful, and nothing in any shape or form interposed to mar the success and the pleasure of the gathering. The arrangements for the *fête* were very similar to those of last year. The principal avenue, leading from the entrance at York Gate to the conservatory, was festooned with opal lamps along each side, the effect thus produced reminding many of the illumination of the Champ Elysées on an Emperor's *fête* day. Many of the numerous paths intersecting the twenty acres of gardens were covered in by awnings and lighted with lamps of various colours, while the flower beds and the ornamental vases throughout the grounds were also surrounded and lit up with similar lamps. Chains of globes fringed other parts of the gardens, marking the bridges and the rest of their special features. The large exhibition tent was lit with the lime light, and occasionally with coloured fires, while the illumination of the conservatory was very effective; the magnesium burners from the outside and the ever-changing electric lights from within, with a very tasteful arrangement of flowers, Ferns, and exotic plants, combining to produce a most dazzling effect. The visitors numbered between 9,000 and 10,000, including the 2,500 fellows and members of the society; and the fact that evening dress was *en règle* added considerably to the success of the gathering as a mere spectacle. The Duke and Duchess of Teck arrived shortly before eleven, and were received at the entrance by the Council, who escorted their Royal and Serene Highnesses to their seats upon the dais, the three bands meanwhile joining in the National Anthem. Her Royal Highness the Princess of Wales, who was also expected to be present, sent, through the President, an intimation to the Council of her regret that she found herself unable to attend. An excellent feature was a charming exhibition, in the large tent, of cut Roses, furnished and arranged in designs by Mr. W. Paul, of Waltham Cross; Mr. Paul had, in fact, quite a garden of cut Roses. Mr. Wills sent many van-loads of his well-grown and graceful plants to decorate the great tent, and in this way materially added to the attractions of the evening. The special feature of the show was the table decorations, which, as usual of late, were tastefully arranged. Bouquets, on the other hand, both for the table and hand, were very poor indeed. It would greatly tend to the improvements of exhibitions of this kind if the various entries composing a class were arranged together, otherwise it is most difficult for the public to compare the various productions. This also is a great obstacle to the efficient performance of the judge's part of the work. We trust these highly successful and interesting evening *fêtes* may go on increasing in brilliancy, and would suggest that next year the society would give prizes to stimulate our great plant decorators into showing us samples of their best work. There is a frequently-expressed feeling that dinner table-decorations are being overdone, but we have heard no such objections made to the floral decoration of a ball-room, or of a hall, or any other portion of a house for such a festive occasion. There would not be much difficulty in so framing the schedule, as to draw to the pleasant gardens in the Regent's Park far more attractive plant displays than have yet been seen there on the occasion of an evening *fête*. For example, we have no doubt that Mr. Wills could arrange a bank or series of groups of plants, which would be more effective than all the table or supper decorations put together.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

ON the 2nd inst. the anniversary festival of this society, of which Her Majesty the Queen is the patroness, was held at the London Tavern. Mr. Alfred de Rothschild presiding, supported by Mr. Alderman and Sheriff Whetham, the Rev. William Rogers, rector of Bishopsgate, Major Snell, and many other gentlemen of consideration. The room in which the entertainment was given was charmingly decorated for the occasion with the choicest flowers and evergreens, in the display of which all the principal florists and nurserymen in and about the metropolis, for miles round, had contributed. The society was established thirty-six years ago, and during that long interval it has aided 214 persons down to the end of 1873, of whom sixty-two then survived, and the total sum paid to them up to the end of December last was £18,760. The funded stock of the society then amounted to £8,900. The chairman, Mr. Alfred de Rothschild, in proposing the toast of the evening, "Success and prosperity to the Gardeners' Royal Benevolent Institution," said he did not require to be a botanist to appreciate the sweet aroma of a Rose or the blushing beauty of the Violet; and it was because that appreciation of what was truly delightful was in us all, although possessed in a higher degree by some, that he ventured to say a few words on a topic which he otherwise should not have had an excuse for approaching. He dwelt on the infinite pleasure which all mankind derived from gazing upon flowers

and plants of every hue and description. Such an attempt, he said, would be to "paint the Lily," or "to throw a perfume on the Violet," for every thing that was gay and bright and joyous was associated with flowers and the fresh foliage of trees. Indeed, it was impossible to deny that they played an important part in the manifold incidents of human life. The conquering hero, on his return from a distant campaign, was garlanded with a wreath of Laurel; the gentle bride, as she was led up the steps of the altar, was encircled with the fragrance of Jasmine and Orange blossoms; and who knew how many a romance, which otherwise might have remained dormant, had not been developed by the "anonymous bouquet?" The English gardener, *par excellence*, had, by his industry, skill, and enterprise, brought the science of horticulture to a perfection which stood unrivalled, and was not even equalled in countries where the sky was sunniest and the climate less capricious. He spared no trouble or expense in introducing from tropical zones the rarest of Orchids and other exotics, and his care was unceasing in nurturing and fostering those delicate and, in many cases, half-withered plants. The chairman concluded by an eloquent appeal to the company to support the charity, in aid of which the entertainment was given, reminding them how largely gardeners contributed to the festivities of the season, and that this had been an exceptionally joyous one none, he said, would deny; for we had placed garlands of Laurel upon our Ashantee heroes, and had welcomed to our shores a fair and illustrious Princess, whose brow was still encircled with Jasmine and Orange blossoms. This and other parts of the chairman's address were much cheered. He concluded by proposing as a toast "The continued and increased success of the institution." Later in the evening the rector of Bishopsgate proposed "The health of the chairman" in appropriate terms. The guests afterwards drank to the health of Mr. Sheriff Whetham, who had honoured them with his company on the occasion. Mr. Edward Cutler, secretary to the fund, at the close of the entertainment, announced that the subscriptions of the evening amounted to £771, of which 100 guineas had been contributed by the chairman and members of his family.

FLORAL DECORATIONS AT TUNBRIDGE WELLS.

AT the annual exhibition of the Tunbridge Wells Horticultural Society, held on the 3rd inst. the classes open for different styles of floral arrangements, were so well filled that it would be impossible to describe each exhibition in detail. We must, therefore, content ourselves with giving descriptions of such only as obtained first prizes in each class. In that for a group of three pieces, the first prize was awarded to Mrs. Seal, of Sevenoaks, for three March stands, the centre one having a trumpet rising out of the upper tazza, these were most tastefully arranged with ordinary flowers and wild Grasses; wired pips of a light blue Larkspur, being placed so as to come out against an orange-shaded Begonia with excellent effect. In the class for a single piece, Mrs. Seal was awarded the first prize for a prettily arranged vase of an uncommon shape; the lower part resembled an ordinary March stand; but the upper tazza, in place of being supported on a stem rising from the centre of the lower one as is mostly the case with these vases, was supported by three slight rods which rose from the outer edge of the lower tazza. In the decoration of this stand the effect would have been much enhanced had Mrs. Seal ran *Lygodium scandens*, or some equally light creeper, up the rods; this style of vase would be well adapted for a drawing-room table. The class for hand bouquets was the weakest part of the show; I do not mean as regards the number staged or the flowers used, but as regards the bouquets themselves; one and all were packed, as many flowers being used in one as might have made two, or, perhaps, three, if skilfully arranged; the best was that exhibited by Mrs. Seal, who was again in this class the fortunate winner of the first prize. It consisted of half-blown yellow Roses, mauve Orchids, and blooms of *Eucharis amazonica*, all of which blended well together. Button-hole bouquets were well represented, the first prize being won by Mr. Rust, the gardener at Eridge Castle. Perhaps one of the most attractive classes of this section of the show was that open for wild flowers arranged for effect; and anything more charming than the stand of these—exhibited by Miss Walker—to whom the first prize was awarded, could not be imagined. The vase itself resembled a March one in form, and each tazza and the trumpet were filled with Dog Roses, blue Forget-me-nots, brown-tinted sprays of Oak leaves, and British Ferns; in each tier the flowers and foliage were most charmingly intermixed. In addition to those just named, in the trumpet was placed a long trailing spray of white *Convolvulus*, which drooped down, and was twined in a most graceful manner. In the class for single pieces for table decoration, for gardeners only (the prizes for which were given by Mrs. G. Howe, Goldney), the first prize was won by Mr. R. Downing, for a very light and effective arrangement. The form of the stand was as follows:—Out of a tazza rose a glass stem, supporting on the top of a trumpet (just like a March stand with the upper tazza taken off); half way up this stem projected three tiny curved branches. In the tazza were blooms of deep crimson Roses, *Stephanotis*, blue-shaded *Statice*, &c., set off by Ferns and other foliage. The small curved branches contained blooms of *Stephanotis* and *Statice*, intermixed with fronds of *Adiantum cuneatum*. In the trumpet was an elegant plume of Ferns, Grasses, and flowers, similar to those employed in other portions of the stand; while, drooping down from the mouth of the trumpet, were long sprays of *Selaginella*, which gave a certain amount of grace to the whole arrangement, that was not to be found in the other stands in this class. The small branches, being very lightly filled, did not interfere with the view across the table; but, had heavy flowers been used in this part of the stand, such would have been the case. On the whole the floral arrangements were admirable.

GREAT SHOW AT ASTON PARK,
BIRMINGHAM.

JULY 7TH, 8TH, 9TH, AND 10TH.

THIS great exhibition was opened at the Lower Grounds, Aston, on the 7th inst. The weather was singularly favourable, being warm, but with just enough sunshine to light up the tents and to bring out the elegant outlines of the plants and the hues of the flowers to the best advantage. It was a considerable task to arrange and put into proper position the immense number of plants brought together on this occasion. As is usually the case with large exhibitions, some exhibitors who enter for competition do not put in an appearance; and, as an allotted space is reserved for each collection entered, there are certain ugly gaps where the plants do not present themselves. This necessitates alterations in the plans of those who direct the grouping of the plants, and some delay is the result. At eleven o'clock, however, the judges were enabled to enter on their several tasks; and, once commenced, the work went on smoothly, and shortly after the time announced the tents were thrown open to the public. During the afternoon large numbers of visitors passed through the tents, but at no time in the day were they inconveniently crowded. At all times locomotion was easy, except at certain points—such as the fruit, the table decorations and bouquets, and the Roses—and here many persons congregated. The general public, who are invariably correct in their estimate of an exhibition of this kind, were entertained with what they saw, and emphatic expressions of admiration and praise were heard on every hand. The success of the undertaking, in short, was complete.

Stove and Greenhouse Plants.—In the grand class of sixteen stove and greenhouse plants, in bloom, there were but three entries, and of those staged by Messrs. Cole & Sons, too much can scarcely be said. The most striking features, perhaps, of the whole collection, were two *Azaleas*—Brilliant and Cheloni—which were masses of bloom. In the collection, too, were some magnificent Heaths, including a very splendid *Erica Cavendishii*, rather past its prime however, and four others possessing considerable merit as specimen plants. The collection also included an *Apelexis*, handsomely and naturally grown, and an *Ixora coccinea* of splendid form and colour, but scarcely bloomed sufficiently. Mr. Cypher's collection could scarcely be called a good second, his specimens failing in size and effect when compared with those of his rival. Among them were a beautiful *Ixora ambouensis*—a very distinct and telling plant, and remarkably well grown; a grand plant of *Clerodendron Balfourii*, also a *Phenocoma prolifera* Barnesi, and *Eucharis amazonica*, admirably flowered. Mr. Marsh's collection, which, though destitute of any great distinguishing feature, contained some pretty well-grown specimens of *Clerodendron Balfourii*, *Hoya carnosa*, *Kalosanthes rosea*, and others. In the class for ten stove and greenhouse plants the Messrs. Cole are again successful as first prize winners, their collection being inferior only in size to that of the previous class. Foremost in this group another *Azalea*, called Brilliant, and an *Ixora aurantiaca* were very remarkable both for foliage and colour. Here also were some well-furnished specimens of *Apelexis macrantha* purpurea. The amateur class for ten stove and greenhouse plants was also well sustained. We have only noticed the gems of the exhibition in the great tent thus far, which contained besides perhaps nothing more striking than the *Cycas revoluta*, *Crotons*, and *Phormium tenax* variegatum, shown by Messrs. Cole & Sons, in their premier prize in the collection of fine-foliaged plants. It is impossible to imagine a grander effect than was produced by the collection of magnificent plants, brought together in this capacious and almost circular tent, the chief specimens being grouped to good advantage.

Orchids.—These were not so well represented as might have been expected at this season. Mr. B. S. Williams had, however, some fine specimens, including *Anguloa Clowesii*, with great waxy Tulip-like flowers of a soft golden-yellow colour; *Vanda tricolor*, a splendid pan of the great Bearded Lady's slipper, the delicately-perfumed *Aërides odoratum* and *A. Lobbi*, one of the dwarfest in habit, and most effective of all the species; the Cape *Disa grandiflora*, with gorgeous flowers of scarlet and gold; and a nice specimen of the orange-flowered *Epidendrum vitellinum*. Mr. W. E. Dixon, of Norwood

Nurseries, Beverley, had a nice group; as had also Mr. Mitchell, gardener to Dr. Ainsworth, one of the most enthusiastic of amateur Orchid-growers. The last-named exhibitor had nicely-grown well-bloomed plants of *Odontoglossum grande*, *O. Schleiperianum*, the beautiful purple-lipped *Cattleya Mendeli*, and others equally good. In the class for single specimens, Mr. B. S. Williams was deservedly awarded the first prize for *Aërides odoratum majus*, with about twenty fine spikes.

Roses.—The Rose tent was a grand sight. Several Rose shows have been held this season, but finer blooms have not before been exhibited than those which appeared at Birmingham on this occasion. Right down the middle of the tent there was arranged, on the central stage, a line of *Fuchsias*, with here and there some showy *Dracenas* and plants of *Lilium auratum*. On either side were arranged the stands of cut Roses, the nurserymen's classes on one side, the amateur's classes on the other. There were two challenge cups given in the Rose classes in addition to the money prizes; one in the nurserymen's class, for seventy-two varieties, and one in the amateur's class, for forty-eight varieties. In the class for seventy-two varieties, no fewer than ten stands were to be found; but the best came from Messrs. Paul & Son, of Cheshunt. There were about four stands in the collection that seemed to stand out from the rest by reason of the finer quality of the flowers; and to judge them accurately and decide on the best, required a great amount of care and attention on the part of the judges. They were quite three-quarters of an hour awarding the first prize in this class; and when it was given to Messrs. Paul & Son it was felt by those who had attentively looked over the flowers that the decision was a just one. In the class for forty-eight varieties, Messrs. Paul & Son were also placed first, and here the competition was close also. Twenty-four Roses, single blooms only, brought to the front a new grower in Mr. H. Merryweather, of Southwell, Notts; Mr. Cant being second. On the opposite side table were staged some of the most beautiful, because sweetest scented, Roses—the Teas; and here, in all his glory of golden uniform, was found *Maréchal Niel*, surrounded by a galaxy of white, blush, and pink beauties, redolent of sweetness and lovely charms. Specially noticeable, also, were boxes containing twelve blooms each of one kind in which some groups of grand colour predominated. Here were the deep red *Alfred Colomb*, the new dark Hybrid *Perpetual Duke of Edinburgh*, the Baroness de Rothschild—the grandest blush-pink Rose in cultivation; also *La France*, a splendid flower of a flesh tint; *Marie Baumann* a crimson-red; *Devoniensis*, that lovely white Tea; and *Maréchal Niel*. The amateurs' collections of cut Roses were not far behind the fine blooms of the trade-growers. With twelve Tea Roses, Mr. C. N. Newdegate's gardener was placed first; but, looked at later in the day than when seen by the judges, the second-placed twelve were the freshest. Mr. Thomas Laxton, of Stamford, also staged a charming collection, as did many others, the different collections exhibiting every shade of colour, from the deepest crimson to pure white.

Fruit.—The chief feature in this department was the collections of eight varieties, to contain not more than two dishes of Grapes. In addition to a £10 prize, there was included a silver challenge cup, value 25 guineas. The best collection came from Mr. W. Coleman, gardener to Earl Somers, and consisted of fine Black Hamburgh and Muscat Grapes, a Moscow Queen Pine Apple, Royal George Peaches, Elruge Nectarines, President Strawberries, and brown Turkey Figs. This was well worthy of the handsome prize which was awarded to it. For Pine Apples there were four classes, and there must have been nearly 100 splendid fruits set up, the majority of the Queens averaging 5 lbs. to 6 lbs. in weight. Then came the collections of three bunches of Black Hamburgh Grapes, and here the first prize was given to three splendid bunches—large, symmetrical, and crowded with evenly-sized berries, covered with a beautiful greyish bloom. These also came from Mr. W. Coleman. Not less interesting were the white Grapes, which were represented by the large amber-coloured bunches of the Muscat of Alexandria, still one of the best-flavoured Grapes in cultivation. The best three bunches came from Mr. Foster, gardener to Mr. E. Greaves, Avonside, Warwick. The bunches taking the second prize had large berries, but they were wanting in the colour and finish that characterise first-class Grapes.

There was a class for Buckland Sweetwater Grapes, a white variety, of a less rich and luscious flavour than the Muscat, but still a good Grape when well grown. Mr. Cox, gardener to Earl Beauchamp, Madresfield Court, had some very fine examples of this well-known Grape. Three bunches of white Grapes, of any other variety than that named in the foregoing classes, were represented by Golden Champion, a large Grape, with luscious, tempting berries. Some fine Frontignans were also exhibited. Next came Peaches, of which there were no fewer than twenty dishes of rich-looking fruit; of Nectarines, there were some thirteen dishes; of Apricots, there were only two dishes, but then it is yet early for them; Figs, two dishes; Black Cherries, five dishes; White Cherries, seven dishes—all of which were very fine. Strawberries were both numerous and fine. Melons were very good, bad, and indifferent. The judges were scarcely to be envied in having to taste so many, for it must be remembered the prizes were awarded according to the flavour of the fruit. There were green-fleshed varieties, and also scarlet-fleshed; the former, generally, the best flavoured. The finest fruit was a Golden Gem, sent by Mr. W. Cox, Madresfield Court.

Table Decorations.—On a long range of side-tables were tastefully placed some charming centre-pieces for dining and drawing-room tables, consisting of glass epergnes dressed with flowers, Ferns, Grasses, &c.; and it was specially noticeable that the simplest and lightest arrangement met with the widest approval. Bouquets, arranged close by, as nice and effective as it is possible to make them, were also objects of much admiration. The bridal bouquets were exceedingly elegant, and opera bouquets were even more beautiful, as the introduction of a few rich tints of colour in graceful arrangement created more pleasing effects than a combination of white flowers only. On the opposite side-table were placed the splendid silver cups which Mr. Quilter had so liberally offered as prizes.

Miscellaneous.—Messrs. Veitch & Sons contributed a fine group of new and rare plants containing most of the novelties recently exhibited at our London exhibitions. Mr. Charles Turner had a charming group of large flowering *Pelargoniums*, very bright and effective, containing among other varieties, Corsair, Protector, Juno, Highland Lassie, Claribel, and Blue Boy, which has the deepest tint of blue of any variety yet raised; Ruth lovely hue of pink; Achievement and Scottish Chieftain, also struck us as being very effective. Clematises were shown by Messrs. Jackman and Son, of Woking, and received more than ordinary attention. These have flowers of either sombre or soft tints, and possess all those charming hues of rich purple and soft lilac, so rarely seen in hardy decorative plants. A neat group of Palms and Ferns, sent by Mr. R. H. Vertegans, of Chad Valley Nursery, Edgbaston, was much admired. A beautiful new pyramidal Ten-week Stock, named Mauve Beauty, sent by Mr. R. Dean, of Ealing, was very effective; its perfume being exceedingly rich, and its colour novel and pleasing. A fine variety of *Lilium auratum*, having an unusual amount of colour in the markings was staged by Messrs. John Standish & Co., of Ascot, and specially commended as a fine variety; while Mr. J. E. Mapplebeck staged some fine hardy Ferns, for which he is so famous, and the judges awarded to several of the newer types first-class certificates of merit. Mr. J. Croucher contributed some pretty little *Haworthias*, curious *Stapelias*, Aloes, and a fine group of *Agaves*. Mr. Pilgrim also sent a nice collection of the last-named plants; while Mr. Pfersdorff, 73, South Row, Kensal New Town, had a fine miscellaneous collection of these now well-known plants. The last-named exhibitor has done more than any other cultivator we know towards increasing the popularity of succulents, and thousands of little specimens, from his establishment, find their way to Covent Garden and other markets, and from thence are distributed to the window gardens of the metropolis.

Horticultural Implements.—This department, from its extent and variety, was one of the most attractive features of the show. There was scarcely an article of any value unrepresented. An idea—though imperfect, it must be admitted—of the nature of the exhibition may be gleaned from the following brief description of some of the stands. Messrs. Dennis & Co., Chelmsford, were extensive exhibitors. At their stand was to be seen a

special life in the shape of a conservatory, named the "Villa." Their selection of greenhouses and other garden erections was so numerous, and of so varied a character, as to suit the tastes of everybody; they also showed a new high pressure valve which promises to be useful; likewise a new hot-water boiler, with patent casing, by which all brick-work setting is not only obviated, but the radiation of heat is prevented, and the heated air is utilised to support combustion; another of their inventions is a water-waste preventor. Messrs. Crowley showed a lawn-mower, "The Invincible," for which a gold medal was awarded. Messrs. Felton & Sons, Birmingham, exhibited a large and varied collection of rustic furniture. Messrs. Powell & Co., of Birmingham, obtained a silver medal for a large assortment of articles, consisting of garden seats, vases, fountains, and flower stands, pumps, engines, syringes, &c. The same firm also exhibited water and hose barrows, lawn mowers, and garden tools. Messrs. Hassall & Singleton, of Freeman Street, Birmingham, furnished heating apparatus and a large number of other useful articles. One of the most attractive exhibitions was made by Messrs. Hartley & Sugden, of Halifax, who, among other things, showed boilers and other heating apparatus, the Windsor, Victoria, and other lawn mowers, &c. Messrs. Boyd & Son, of Paisley, were the exhibitors of a number of excellent greenhouses. The Alpha patent air gas-making apparatus, through the use of which everyone is enabled to supply himself with gas at a cheap rate, was exhibited by Mr. H. L. Muller, of 22, Mary Ann Street, Birmingham. The characteristics of the apparatus set forth that no heat is required in the production, the gas is made instantaneously, is of a superior illuminating or heating power to coal gas, purer and less costly. The arrangements for the fitting-up of the apparatus are in every respect simple and complete. Mr. Henry Inman, of Stretford, near Manchester, who a few years ago supplied the rustic houses, bridges, &c., for the Aston Lower Grounds, obtained a first prize for a large variety of rustic summer-houses, garden-seats, tables, and vases. The Dromore Patent Heating Company exhibited Cowan's patent compensating system of heating horticultural and other buildings, which was highly commended. Mr. Peters, 26, Carr's Lane, Birmingham, furnished all kinds of horticultural implements, seats, vases, pumps, engines, lawn-mowers, &c. To the garden furniture in this collection a silver medal was awarded. Mr. Kay, of Navigation Street, Birmingham, exhibited filters, fountains, and aquaria. Messrs. Perks & Co., of 50 and 52, Dale End, Birmingham, showed Parker's dry earth-closets, glass louver ventilators, and similar contrivances. Messrs. Follows & Bates, of Manchester, showed a large collection of the "Climax" and Anglo-American lawn-mowers. Messrs. Baker & Co. obtained a silver medal for garden arches, flower and Fern-stands, garden-chairs, stools, hanging baskets, conservatory cages, aviaries, &c. Mr. Matthews, Weston-super-Mare, showed an elegant assortment of terra-cotta work, including vases, stands, fountains, statuary figures, Italian and Fern baskets, for which a silver medal was awarded. Messrs. Green & Sons, Leeds, exhibited a selection of lawn-mowers and Green's patent hot-water boilers. Messrs. A. Smith & Co., of Bath, showed their patent siphonic watering pot, to which allusion was made last week. Messrs. Mapplebeck & Son, Bull Ring, Birmingham, were awarded a silver medal for fountains and vases. Mr. J. Clark was awarded a silver medal for plant protectors and similar contrivances. For cheap garden carts Mr. W. Sawney, Beverley, Yorkshire, received a bronze medal. Garden hose was furnished by Mr. J. Pumphrey, 5, Broad Street Corner, Birmingham, to whom a bronze medal was awarded; a similar award was also made to water appliances for garden purposes, shown by Messrs. Ball & Purser, Carr's Lane, Birmingham; also for hot water valves, shown by Messrs. Jones & Co., Broad Street, Worcester; peat and sand, contributed by Messrs. Fraser & Co., Leighton Buzzard, were highly recommended.

The Lawn Mower Contest.—This took place on Wednesday last, when four makers competed, viz., Messrs. Green, Barnard, Edwards (Messrs. Crowley & Co.), and Hartley & Sugden. No spaces were marked off for each machine to mow, the competing machines being merely run two or three times over a piece of Grass not exceeding 30 yards in length. No idea could, therefore,

be formed of the time in which any of them could do a certain amount of work; there was no dynamometer applied to test the draught, and each exhibitor adjusted the height of cut according to his own notion, the Grass being very short though thickish at bottom. We do not believe half-a-dozen barrow loads were cut by all the competing machines, which numbered about twenty. The machines entered all worked fairly well. The prizes were awarded as follows:—Gold medal, Mr. Edwards; silver medal, Messrs. Green; bronze medal, Messrs. Hartley & Sugden. The trial, so far as it went, may be considered to have been fairly carried out. It must be regarded, however, as of little value as a guide to intending purchasers of lawn-mowers, as the question as to which is the best lawn-mower remains still unsettled. Neither Messrs. Shanks, Ramsden, Follows & Bates, nor the Archimedian competed.

Judges.—These were:—Class 1 to 12: Mr. Robert Parker, Exotic Nursery, Tooting, London; Mr. A. Roger, superintendent Battersea Park, London; and Mr. Cunningham, The Gardens, Crow Hall, Bath. Classes 13 to 37: Mr. T. Moore, Botanic Garden, Chelsea, London; Mr. C. Penny, The Gardens, Sandringham, King's Lynn; and Mr. R. H. Vertegaus, Chad Valley, Edgbaston. Classes 38 to 53: Mr. D. T. Fish, The Gardens, Hardwick House, Bury St. Edmunds; Mr. J. Fleming, The Gardens, Cliveden, Maidenhead; and Mr. James Cutbush, The Nursery, Highgate, London. Classes 54 to 65: Mr. Shirley Hibberd, Stoke Newington, London; the Rev. S. E. Hoole, Causton Manor, Newark; and the Rev. C. Peach, Appleton-le-Street, Malton. Classes 66 to 87: Mr. John Laing, Stanstead Park, Forest Hill, London; Mr. J. F. Meston, Haverstock Hill, London; and Mr. John Standish, Royal Nurseries, Ascot. Classes 88 to 109: Mr. Thomas Bailey, the Gardens, Sharncliffe, Armistaw; Mr. A. F. Barron, Royal Horticultural Society, Chiswick, London; and Mr. E. Bennett, The Gardens, Hatfield House, Herts. Classes 110 to 130a: Mr. Peter Barr, King Street, Covent Garden, London; Mr. J. Pottle, Sudborne Hall Gardens, Wickham Market; and Mr. J. McKirdy, Woodbine Lodge, Beckenham. The arrangement of the show was entrusted to Mr. Baines, of Southgate, and Mr. Spinks, Mr. Quilter's foreman.

LIST OF AWARDS.

DIVISION 1.—PLANTS.

Sixteen Stove and Greenhouse plants, in bloom—1st prize, £25, E. Cole and Sons, Withington, near Manchester; 2nd, £18, Mr. Cypher, Queen's Road, Cheltenham; 3rd, £12, Mr. Marsh, gardener to Mr. J. O. Bacchus, Binswood, Leamington; a silver challenge cup, of the value of 25 guineas, in addition to the money prize, E. Cole and Sons.

Ten Stove and Greenhouse plants, in bloom, nurserymen—1st prize, £15, E. Cole and Sons; 2nd, £10, Mr. F. Perkins, Leamington; 3rd, £7, Mr. Cypher.

Ten Stove and Greenhouse plants, in bloom, amateurs—1st prize, £15, Mr. Chapman, Rugeley; 2nd, £10, Mr. Chadwick, gardener to Mr. C. Nelson, Crackley Hill, Kenilworth.

Specimen Stove plant, in bloom—1st prize, £1 10s., Mr. Webb, gardener to Mr. J. Gulson, Stoke, Coventry, and E. Cole and Sons, equal; 2nd, £1, Mr. B. S. Williams; 3rd, 15s., Mr. Chadwick.

Specimen Greenhouse plant, in bloom—1st prize, £1 10s., Mr. B. S. Williams; 2nd, £1, Mr. Parker, Rugeley; 3rd, 15s., Mr. Chadwick.

Nine Fine-foliaged Plants, nurserymen—1st prize, £10, Cole and Sons; 2nd, £7, Mr. B. S. Williams; 3rd, £5, Mr. Heath, Cheltenham; Mr. Pilgrim and Mr. Dixon (extra).

Nine Fine-foliaged Plants, amateurs—1st prize, £10, Mr. T. M. Shuttleworth; 2nd, £7, Mr. Forster; 3rd, £5, Mr. Brown.

Six Fine-foliaged Plants, nurserymen—1st prize, £5, Mr. Heath; 2nd, £3, not awarded; 3rd, £2, E. Cole & Son.

Six Fine-foliaged Plants, amateurs—1st prize, £5, Mr. Marsh; 2nd, £3, Mr. Brown.

Specimen Fine-foliaged Plant—1st prize, £1 10s., Mr. Heath; 2nd, £1, Mr. Croucher, gardener to Mr. J. T. Peacock, Hammersmith; 3rd, 15s., Mr. Beecher, gardener to Mr. L. Foster, Walsall.

Six Dracenas (green varieties excluded)—1st prize, £4, Mr. Brown.

Specimen Croton—1st prize, £1 10s., E. Cole & Sons; 2nd, £1, Mr. Heath; 3rd, 15s., Mr. Chapman.

Eight Stove and Greenhouse Ferns, nurserymen—1st prize, £10, Mr. B. S. Williams; 2nd, £7, Mr. Cypher and Mr. T. M. Shuttleworth, equal; 3rd, £5, Mr. Pilgrim.

Eight Stove and Greenhouse Ferns, amateurs—1st prize, £10, Mr. Brown; 47, Mr. T. M. Shuttleworth, equal; no 2nd prize; 3rd, £5, Mr. Coleman.

One Tree Fern, nurserymen—1st prize, £2, Mr. B. S. Williams; 2nd, £1, Mr. Pilgrim; 3rd, 15s., Mr. Vertegaus.

One Tree Fern, amateurs—1st prize, £2, Mr. Jones; 2nd, £1, Mr. Quarterman, gardener to Mr. W. T. Gladstone, Edgouston.

Specimen Stove or Greenhouse Ferns (Adiantum excluded)—1st prize, £1 10s., Mr. B. S. Williams; 2nd, £1, Mr. Parker; 3rd, 15s., Mr. Shuttleworth.

Specimen Adiantum—1st prize, £1 10s., Mr. Cypher; 2nd, £1, Mr. Turner, Slough; 3rd, 15s., Messrs. Cole & Sons.

Six Lycopodium—1st prize, £2, Mr. Webb; 2nd, £1 10s., Mr. Allen; 3rd, Mr. Jones.

Twelve Hardy Ferns—1st prize, £4, Mr. Mapplebeck, Moseley; 2nd, £3, Mr. Pilgrim; 3rd, £2, Messrs. Ivory & Son, Dorking.

Three Potted Plants—1st prize, £5, Mr. Shuttleworth; 2nd, £3, Mr. B. S. Williams.

Specimen Potted Plants—1st prize, £1 10s., Mr. B. S. Williams; 2nd, £1, Mr. Shuttleworth.

Six Ericas, nurserymen—1st prize, £6, Mr. Dixon; 2nd, £4, Mr. Cypher.

Six Ericas, amateurs—1st prize, £6, Mr. Chapman.

Specimen Erica—1st prize, £1 10s., Messrs. Cole & Sons; 2nd, 15s., Mr. B. S. Williams; 3rd, 15s., Mr. Foster.

Six Palms—1st prize, £7, Mr. B. S. Williams; 2nd, 17, Mr. Leacock; 3rd, 27, Messrs. Felton & Sons and Mr. Marsh, equal.

Six Palms in 3-inch Pots—1st prize, 37, Messrs. Felton & Sons; 2nd, 27, Mr. R. H. Vertegaus; 3rd, 17, Mr. Pilgrim.

Six New Plants, in or out of flower (Orchids excluded)—1st prize, £5, Mr. B. S. Williams; 2nd, £3, Mr. Cypher; 3rd, £2, Messrs. Felton & Sons.

Six New and Rare Plants, sent out in 1872, 1873, or 1874, in or out of flower—1st prize, £5, Mr. B. S. Williams; 2nd, £3, Mr. Dixon; 3rd, £2, Mr. Pfersdorff.

Ten Orchids—1st prize, £12, Mr. B. S. Williams; 2nd, £9, Mr. Mitchell, gardener to Dr. Ainsworth, Broughton, Manchester.

Six Orchids, nurserymen—1st prize, £6, Mr. B. S. Williams.

Six Orchids, amateurs—1st prize, £6, Mr. Mitchell; 2nd, £1, Mr. Williamson, Ramsdale Hall, Lawton, Cheshire.

Specimen Orchid—1st prize, £1 10s., Mr. B. S. Williams.

Nine Gloxinias—1st prize, £1 10s., Mr. Allen.

Twelve Agaves—1st prize, £8, Mr. J. Croucher; 2nd, £4, Mr. Pfersdorff; 3rd, £2, Mr. Pilgrim.

Collection of Twenty-five Cacti—1st prize, £3, Mr. Croucher; 2nd, £4, Mr. Pfersdorff.

Collection of Twenty-five Succulents (Cacti and Agaves excluded)—1st prize, £6, Mr. J. Croucher; 2nd, £4, Mr. Pfersdorff; 3rd, £2, Mr. Pilgrim.

Ten Clematis—1st prize, £7, Messrs. Jackman & Son, Woking; 2nd, £5, Mr. Vertegaus.

Six Pots of Liliun auratum—1st prize, £4, not awarded; 2nd, £3, not awarded; 3rd, £2, Mr. Turner.

Nine Fuchsias—1st prize, £5, Mr. Caldicott; 2nd, £3, Mr. Harborne, Smethwick; 3rd, £2, Mr. Coleman.

Four Fuchsias—1st prize, £2 10s., Mr. Cox, gardener to Earl Beauchamp; 2nd, £1 10s., Mrs. Brown, Rugby; 3rd, £1, Mr. Harborne.

Specimen Fuchsia—1st prize, £1, Mr. Harborne; 2nd, 15s., Mr. Caldicott; 3rd, 15s., Mr. Coleman.

Nine Show Pelargoniums—1st prize, £5, Mr. Turner; 2nd, £3, Mr. Quarterman; 3rd, £2, Mr. Marsh.

Six Show Pelargoniums—1st prize, £3, Mr. Turner; 2nd, £2, Mr. Quarterman; 3rd, £1, Mr. Allen.

Collection of Twenty Show Pelargoniums, not less than twelve varieties—1st prize, £5, Mr. Turner; 2nd, £3, not awarded; 3rd, £2, Mr. Chadwick.

Six Fancy Pelargoniums—1st prize, £3, Mr. Quarterman; 2nd, £2, Mr. Turner; 3rd, £1, Mr. Coleman.

Nine Zonal Pelargoniums—1st prize, £5, Mr. Marsh; 2nd, £3, Mr. Cox; 3rd, £2, Mr. Quarterman.

Six Nosegay or Hybrid Nosegay Pelargoniums—1st prize, £3, Mr. Turner; 2nd, £2, Mr. Quarterman.

Six Tricolor Pelargoniums, gold or silver-edged—1st prize, £3, Mr. Ford; 2nd, £2, Mr. Marsh; 3rd, £1, Mr. Turner.

Six Gold and Bronze Pelargoniums—1st prize, £1 10s., Mr. Allen; 2nd, £1, Mr. Newton; 3rd, 15s., Mr. Cox.

Six Double Pelargoniums—1st prize, £2, Mr. Parker.

DIVISION 2.—ROSES AND OTHER CUT FLOWERS

Seventy-two Roses, single trusses, nurserymen—1st prize, £10, Messrs. Paul and Son; 2nd, £8, Mr. Cant; 3rd, £5, Mr. Cranston; 4th, £3, Messrs. Perkins; a silver challenge cup, of the value of 25 guineas, offered in addition to the money prize—Messrs. Paul and Son.

Forty-eight Roses, three trusses each, nurserymen—1st prize, £6, Messrs. Paul and Son; 2nd, £4, Mr. Cranston; 3rd, £3, Mr. Keynes; 4th, £2, Mr. Turner.

Twenty-four Roses, Hybrid Perpetuals only, three trusses of each, nurserymen—1st prize, £4, Messrs. Paul and Son; 2nd, £3, Mr. Cant; 3rd, £2, Mr. Prince, Oxford; 4th, £1, Messrs. Perkins and Son.

Twenty-four Roses, single trusses, nurserymen—1st prize, £3, Mr. Moreweather; 2nd, £2, Mr. Cane; 3rd, £1, Mr. Prince; 4th, 10s., Mr. Turner.

Forty-eight Roses, single trusses, amateurs—1st prize, £3, Mr. State, gardener to the Rev. C. Evans, Southall; 2nd, £1, Mr. Draycott, gardener to Sir B. Cunard, Bart., Hilderton Hall, Leicester; 3rd, £3, Rev. G. Arkwright, Pencombe, Hereford; 4th, £2, Mr. Draycott, a silver challenge cup, of the value of 25 guineas, in addition to the money prize—Mr. State.

Thirty-six Roses, single trusses, amateurs—1st prize, £5, Mr. Evans; 2nd, £3, Mr. Parnell; 3rd, £2, Mr. Paget.

Twenty-four Roses, single trusses, amateurs—1st prize, £4, Mr. Mayo, Oxford; 2nd, £3, Mr. Parnell; 3rd, £2, Mr. Evans; 4th, £1, Mr. Fewkes.

Twelve Roses, single trusses—1st prize, 2l., Mr. Brown; 2nd, 1l. 10s., Mr. Parnell; 3rd, 1l., Mr. Evans; 4th, 10s., Mr. State.

Twelve Roses of 1871, 1872, or 1873, single trusses—1st prize, 2l., Messrs. Paul & Son; 2nd, 1l. 10s., Mr. Cranstone; 3rd, 1l., Mr. Howes; 4th, 15s., Mr. Cant.

Six Trusses of any Rose of 1871, 1872, or 1873—1st prize, 1l., Mr. Cranstone; 2nd, 15s., Messrs. Paul & Son; 3rd, 10s., Mr. Cant; 4th, 7s., Mr. Laxton.

Twelve Tea-scented and Noisette Roses, single trusses, nurserymen—1st prize, 1l. 10s., Mr. Cant; 2nd, 1l., Messrs. Paul & Son; 3rd, 15s., Mr. Prince.

Twelve Tea-scented and Noisette Roses, single trusses, amateurs—1st prize, 2l., Mr. Evans; 2nd, 1l. 10s., Rev. G. Arkwright; 3rd, 1l., Mr. Laxton.

Twelve Roses, single blooms—1st prize, 1l. 10s., Mr. Turner.

Twenty-four Roses, in not fewer than twelve varieties, grown in pots not exceeding eight inches in diameter—1st prize, 6l., Mr. Whiteman; 2nd, 4l., Mr. Cooling.

Twelve trusses of H. P. Alfred Colomb—1st prize, 1l., Mr. Turner; 2nd, 15s., Mr. Cant.

Twelve trusses of H. P. Duke of Edinburgh—1st prize, 1l., Mr. Turner; 2nd, 15s., Mr. Cant.

Twelve trusses of H. P. Baroness Rothschild—1st prize, 1l., Mr. Cant; 2nd, 15s., Messrs. Paul & Son.

Twelve trusses of H. P. La France—1st prize, 1l., Mr. Cant.

Twelve Trusses of H. P. Marie Baumann—1st prize, 1l., Mr. Prince; 2nd, 15s., Messrs. Paul & Son.

Twelve Trusses of Noisette Marchal Niel—1st prize, 1l., Mr. Cant; 2nd, 15s., Rev. W. H. Benn.

Twelve Trusses of Tea Devonensis—1st prize, 1l., Mr. Cant; 2nd, 15s., Mr. Way, Jesus College, Oxford.

One Vase of Roses, cut blooms, set up with Rose foliage only—1st prize, 1l., Messrs. Perkins; 2nd, 15s., Mr. Chard.

Eighteen Bunches of Cut Flowers, nurserymen—1st prize, 4l., Cole & Sons; 2nd, 3l., Messrs. Perkins.

Eighteen Bunches of Cut Flowers, amateurs—1st prize, 4l., Mr. Chapman; 2nd, 3l., Mr. Milton, Manchester; 3rd, 2l., Mr. Chadwick.

Eighteen Bunches of Hardy Border Flowers—1st prize, 2l., Messrs. Perkins.

Twelve Carnations (selfs excluded)—1st prize, 1l. 10s., Mr. Turner; 2nd, 1l., Mr. Hooper; 3rd, 10s., Mr. Catley.

Twelve Self Carnations—1st prize, 1l., Mr. Turner; 2nd, 15s., Mr. Catley; 3rd, 10s., Mr. Hooper.

Twelve Picotees—1st prize, 1l. 10s., Mr. Turner; 2nd, 1l., Mr. Hooper; 3rd, 10s., Mr. Catley.

Twelve Pinks—1st prize, 1l. 10s., Mr. Turner; 2nd, 1l., Mr. Brown; 3rd, 10s., Mr. Hooper.

One Bridal Bouquet—1st prize, 2l., Messrs. Perkins; 2nd, 1l. 10s., Mr. Turner, Liverpool; 3rd, 1l., Messrs. Felton & Son.

One Ball or Opera Bouquet—1st prize, 2l., Messrs. Perkins; 2nd, 1l. 10s., Mr. Jones; 3rd, 1l., Mr. Jackson.

Three Pieces for Table Decoration (fruit excluded)—1st prize, 6l., Mr. Cooke; 2nd, 5l., Mr. Jackson; 3rd, 4l., Mr. Smith, gardener to Mr. C. N. Newdegate, M.P.; 4th, 3l., Mr. Cypher.

One Centre Piece—1st prize, 2l., Mr. Cypher; 2nd, 1l. 10s., Messrs. Perkins; 3rd, 1l., Mr. Turner; 4th, 10s., Messrs. Phippin & Robinson.

Gentlemen's Button-hole—1st prize, 15s., Messrs. Pope & Son; 2nd, 10s., Miss Baines, Southgate; 3rd, 7s., Mr. Turner; 4th, 5s., Mr. Cypher.

DIVISION III.—FRUIT.

Two Queen Pine Apples—1st prize, 2l., Mr. Harris, Singleton Gardens, Swansea; 2nd, 1l. 10s., Mr. Bond, gardener to Mr. G. A. Smith, Weybridge; 3rd, 15s., Mr. Sandford, gardener to the Bectine, Kerby Lonsdale, Westmoreland.

Two Smooth Cayenne Pine Apple—1st prize, 2l., Mr. Wilson.

One Pine Apple, any other variety—1st prize, 1l., Mr. Bruce.

Six Pine Apples, not necessarily distinct—1st prize, 5l., Mr. Harris; 2nd, 4l., Mr. Bond; 3rd, 3l., Mr. Wilson; 4th, 2l., Mr. Miles.

Three Bunches of Black Hamburgh Grapes—1st prize, 3l., Mr. Coleman; 2nd, 2l., Mr. Fleming; 3rd, 1l., Mr. Douglas, Radford, Notts.

Three Bunches of Black Grapes, any other variety—1st prize, 3l., Mr. Sweeting; 2nd, 2l., Mr. M. Henderson.

Three Bunches of Muscat or Black Alexandria Grapes—1st prize, 3l., Mr. Foster; 2nd, 2l., Mr. Cox; 3rd, 1l., Mr. Haynes.

Three Bunches of Buckland Sweetwater Grapes—1st prize, 3l., Mr. Cox; 2nd, 1l. 10s., Mr. Douglas; 3rd, 1l., Mr. Cushman.

Three Bunches of White Grapes, any other variety—1st prize, 2l., Mr. Douglas; 2nd, 1l. 10s., Mr. Coleman; 3rd, 1l., Messrs. Standish and Co., Ascot.

Collection of six varieties of Grapes, single bunches—1st prize, 5l., Mr. Douglas; 2nd, 3l., Mr. Henderson; 3rd, 2l., Mr. Bannerman.

Six Peaches, any variety—1st prize, 1l. 10s., Mr. Miles; 2nd, 1l., Mr. Bannerman; 3rd, 15s., Mr. Jackson; extra, Mr. Coleman.

Six Nectarines, any variety—1st prize, 1l. 10s., Mr. Haynes; 2nd, 1l., Mr. Bannerman and Mr. Coleman; 3rd, 15s., Mr. Henderson.

Eight Apricots, any variety—1st prize, 1l., Mr. Smith; 2nd, 15s., Mr. Winstone, gardener to Mr. H. B. Preston, Kenilworth.

Twelve Figs, any variety—1st prize, 1l., Mr. Bannerman; 2nd, 15s., Mr. Foster.

Fifty Black Cherries, any variety—1st prize, Mr. Miles; 2nd, 15s., Mr. Barnwell; 3rd, 10s., Mr. Gardiner.

Fifty White Cherries, any variety—1st prize, 1l., Mr. Miles; 2nd, 15s., Mr. Douglas; 3rd, 10s., Mr. Miles.

Twenty-five Strawberries, of the British Queen or Dr. Hogg type, one variety—1st prize, 1l., Mr. Cox; 2nd, 15s., Mr. Gardiner; 3rd, 10s., Mr. Taylor.

Twenty-five Strawberries, any other variety—1st prize, 1l., Mr. James; 2nd, 15s., Mr. Chadwick; 3rd, 10s., Mr. Taylor.

One Melon, Green-fleshed—1st prize, 1l., Mr. Cox; 2nd, 15s., Mr. Nott; 3rd, 10s., Mr. Gardiner.

One Melon, Scarlet-fleshed—1st prize, 1l., Mr. Read; 2nd, 15s., Mr. Malcolm; 3rd, 10s., Mr. Coleman.

Collection of Eight Dishes of Fruits, to contain not more than Two Dishes of Grapes—1st prize, 10l., Mr. Coleman; 2nd, 7l., Mr. Bannerman; 3rd, 5l., Mr. Goodacre.

DIVISION IV.—VEGETABLES.

Collection of Ten Dishes of Vegetables (Cucumber and Salading excluded)—1st prize, 5l., Mr. Miles; 2nd, 3l., Mr. Turk; 3rd, 2l., Mr. Holder; a Silver Cup, of the value of 25 guineas, in addition to the money prizes in the preceding class—Mr. Miles.

Collection of Eight Dishes of Vegetables (Cucumber and Salading excluded)—1st prize, 3l., Mr. Arkell, gardener to Mr. A. G. Skinner, Cheltenham; 2nd, 2l., Mr. Ford; 3rd, 1l., Mr. Burnett.

Three Dishes of Kidney Potatoes, twelve tubers of each—1st prize, 1l. 10s., Mr. Baker; 2nd, 1l., Mr. Biddles, Loughborough; 3rd, 10s., Mr. Bagerley.

Three Dishes of Round Potatoes, twelve tubers of each—1st prize, 1l. 10s., Mr. Baker; 2nd, 1l., Mr. Gilbert; 3rd, 10s., Mr. Bagerley.

One Dish of Twelve Kidney Potatoes, one variety—1st prize, 10s., Mr. Biddles; 2nd, 7s., Mr. Miles; 3rd, 5s., Mr. Bagerley.

One Dish of Twelve Round Potatoes, one variety—1st prize, 10s., Mr. Biddles; 2nd, 7s., Mr. Craddock; 3rd, 5s., Mr. Baker.

Three Varieties of Peas, half a peck of each—1st prize, 1l. 10s., Mr. Gilbert; 2nd, 1l., Mr. Richardson; 3rd, 10s., Mr. Cox and Mr. Turk, equal.

One Dish of Peas, half a peck, one variety—1st prize, 15s., Mr. Miles; 2nd, 10s., Mr. Baker; 3rd, 5s., Mr. Dean.

One Dish of Twelve Onions, one variety—1st prize, 10s., Mr. Smith; 2nd, 7s., Mr. Turk; 3rd, 5s., Mr. Arkell.

One Brace of Cucumbers—1st prize, 15s., Mr. Douglas; 2nd, 10s., Mr. Holden; 3rd, 5s., Mr. Chadwick.

One Dish of French Beans, fifty pods, one variety—1st prize, 15s., Mr. Miles; 2nd, 10s., Mr. Wilson; 3rd, 5s., Mr. Day.

Three Sticks of Celery—1st prize, 15s., Mr. Arkell; 2nd, 10s., Mr. Smith; 3rd, 5s., Mr. Bloxham, Bletchley.

Three Sticks of Rhubarb—1st prize, 15s., Mr. Smith; 2nd, 10s., Mr. Cox; 3rd, 5s., Mr. Mitchell.

One Dish of Twelve Carrots, one variety—1st prize, 10s., Mr. Arkell; 2nd, 7s., Mr. Smith; 3rd, 5s., Mr. Baker.

One Dish of Twelve Turnips, one variety—1st prize, 7s., Mr. Holder; 2nd, 5s., Mr. Douglas; 3rd, 3s., Mr. Barnwell.

Three Cabbages, one variety—1st prize, 5s., Mr. Ford; 2nd, 3s., Mr. Arkell; 3rd, 2s., Mr. Brown.

Three Cos Lettuces, one variety—1st prize, 5s., Mr. Brown; 2nd, 3s., Mr. A. Dean; 3rd, 2s., Mr. Allen.

Three Cauliflowers, one variety—1st prize, 10s., Mr. Barnwell; 2nd, 7s., Mr. Ford; 3rd, 5s., Mr. Miles.

Bunch of Thirty Heads of Asparagus—1st prize, 10s., Mr. Arkell; 2nd, 7s., Mr. Smith; 3rd, 5s., Mr. Turk.

One Dish of Thirty Broad Beans—1st prize, 7s., Mr. Miles; 2nd, 5s., Mr. Richardson.

Basket or Tray of Salads, not less than twelve varieties—1st prize, 1l. 10s., Mr. Smith; 2nd, 1l., Mr. Holden; 3rd, 15s., Mr. Turk.

One Dish of Twelve Mushrooms—1st prize, 10s.; Mr. Cushman; 2nd, 7s., Mr. Allen; 3rd, 5s., Mr. Holder.

One Dish of Twelve Tomatoes—1st prize, 15s., Mr. Cox; 2nd, 10s., Mr. Miles; 3rd, 5s., Mr. Arkell.

Special prizes offered by Mr. Thomas Laxton, Stamford, for any four of the following varieties of new Peas, raised by himself, and distributed by Messrs. Hurst, Leadenhall Street, viz., Laxton's No. 1, Fillbasket, Speculative, William the First, Omega, and Popular, Fifty Pods each.—1st prize, 4l., "not known"; 2nd, 2l. 10s., Mr. Gilbert; 3rd, 1l., Mr. Miles.

COVENT GARDEN MARKET.

JULY 10th.

The market is still well supplied, and the bustle of the fruit season is now commencing in earnest. All kinds of small fruits, as Gooseberries, Currants, Strawberries, Raspberries and Cherries are abundant and cheap. Now is the time to obtain the above for preserving, as the two latter kinds more especially will never be cheaper or fresher than at present. Among dessert fruit, Grapes, Figs, Melons, Pines, and Peaches, are of unexceptionally fine quality. West Indian Pines are now plentiful, two large cargoes having recently come to hand in splendid condition. Vegetables are fresh and plentiful. Cucumbers and small Salading are now in excellent condition. Tomatoes, principally imported fruit, are abundant and of excellent quality. Among cut flowers, Stephanotis, Roses, Bouvardia, Heliotrope, Waterlilies, Tuberoses, Pinks, Carnations, Double Pelargoniums, and Corn-flowers, make up the principal supply. Plants in pots consist of Pelargoniums, Fuchsias, and other ordinary flowering plants. Foliage plants, as Ficus elastica (the common India-rubber plant), Isoplepis gracilis, small Palms, Ferns, and Dracaenas, and the graceful Umbrella Sedge are much admired, and sell in large quantities for room, window, and balcony decoration.

Cut Flowers.

	s.	d.	s.	d.
Calla blooms, per doz.	...	...	3	0 10 9
Carnations, per doz. bunches	...	...	4	0 6 0
Eschscholtzia	...	...	3	0 6 0
Gardenias, per doz.	...	...	3	0 8 0
Heliotropes, per doz. sprays	...	...	0	0 6 0
Mignonette, 12 bunches...	...	...	2	0 6 0
Pelargoniums, Cape, per 12 sprays	...	...	0	6 1 0
Pelargoniums, Zonal, per 12 sprays	...	...	0	3 0 6
Roses, indoor, per doz.	...	...	1	0 6 0
Roses, out-of-door, do.	...	...	0	4 1 0
Stephanotis, 12 sprays	...	...	3	0 3 0
Sweet Peas, per doz. bunches	...	...	3	0 9 0
Sweet Sultan	...	...	4	0 9 0
Pinks, per doz. bunches	...	...	2	0 6 0

Plants in Pots.

Balsams	...	...	4	0 12 0
Begonias, per doz.	...	...	6	0 12 0
Calceolaria	...	...	4	0 12 0
Cyperus, per doz.	...	...	6	0 12 0
Dracæna terminalis, per doz.	...	...	12	0 30 0
Dracæna viridis, per doz.	...	...	12	0 24 0
Fuchsia, per doz.	...	...	4	0 12 0
Gardenias	...	...	12	0 24 0
Heaths, in variety, per doz.	...	...	12	0 30 0
Hydrangeas	...	...	12	0 24 0
Mignonette, per doz.	...	...	3	0 9 0
Myrtles, per doz.	...	...	2	6 15 0
Palms, in variety, each	...	...	4	0 9 0
Scarlet Pelargoniums, per doz.	...	...	4	0 9 0

Prices of Fruits.

Chillies, per 100	...	...	2	0 3 0
Cobs, per lb.	...	...	1	0 1 6
Cherries, per lb.	...	...	0	6 1 6
Grapes, hothouse, black, per lb.	...	...	2	0 6 0
Lemons, per 100	...	...	8	0 14 0
Nectarines, per doz.	...	...	6	0 15 0
Oranges, per 100	...	...	6	0 16 0
Peaches, per doz.	...	...	8	0 24 0
Pine Apples, per lb.	...	...	3	0 6 0
Ditto, imported, each	...	...	1	0 2 0
Strawberries, per lb.	...	...	0	6 2 0
Walnuts, per bushel	...	...	8	0 12 0
Ditto, per 100	...	...	1	0 1 6

Prices of Vegetables.

Artichokes, per doz.	...	...	3	0 6 0
Beet, Red, per doz.	...	...	1	0 2 0
Cabbage, per doz.	...	...	1	6 2 0
Carrots, per bunch	...	...	0	4 0 6
Carrots, young, per bunch	...	...	1	6 0 0
Cauliflower, per doz.	...	...	3	0 6 0
Celery, per bundle	...	...	1	6 2 0
Coleworts, per doz. bunches	...	...	3	0 4 0
Cucumbers, each	...	...	0	4 0 9
Endive, per doz.	...	...	2	0 0 0
Fennel, per bunch	...	...	0	3 0 0
Garlic, per lb.	...	...	0	6 0 0
Herbs, per bunch	...	...	0	3 0 0
Horseradish, per bundle	...	...	3	0 4 0
Leeks, per bunch	...	...	0	3 0 0
Lettuces, per doz.	...	...	1	0 2 0
Mushrooms, per pottle	...	...	2	0 3 0
Mustard and Cress, per punnet	...	...	0	2 0 0
Onions, per bushel	...	...	4	0 6 0
Onions, button, per quart	...	...	0	8 0 0
Parsley, per doz. bunches	...	...	4	0 0 0
Parsnips, per doz.	...	...	0	9 1 6
Peas, per quart	...	...	1	0 1 6
Potatoes per bushel	...	...	3	0 6 0
" Kidneys, per lb.	...	...	0	3 0 6
" Round, per lb.	...	...	0	2 0 3
Radishes, per doz. bunches	...	...	1	0 1 6
Rhubarb, per bunch	...	...	0	3 0 6
Salsify, per bundle	...	...	1	0 1 6
Scorzonera, per bundle	...	...	1	0 0 0
Shallots, per lb.	...	...	0	6 0 0
Spinach, per bushel	...	...	2	0 0 0
Turnips, young, per bunch	...	...	1	0 0 0
Turnips, per bunch	...	...	0	3 0 0

FOLLOWS & BATE'S

PATENT PRIZE MEDAL "CLIMAX" AND "ANGLO-AMERICAN" LAWN MOWERS.

Upwards of 22,000 sold during the past four years.

FOLLOWS & BATE have received the FIRST PRIZE in EVERY COMPETITION; and at the Vienna Exhibition, in 1873, the ONLY Medal given for Lawn Mowers was awarded to them, their Machines being considered by the Jurors entitled to this distinction, over all other competitors from Great Britain, the Continent, and America.

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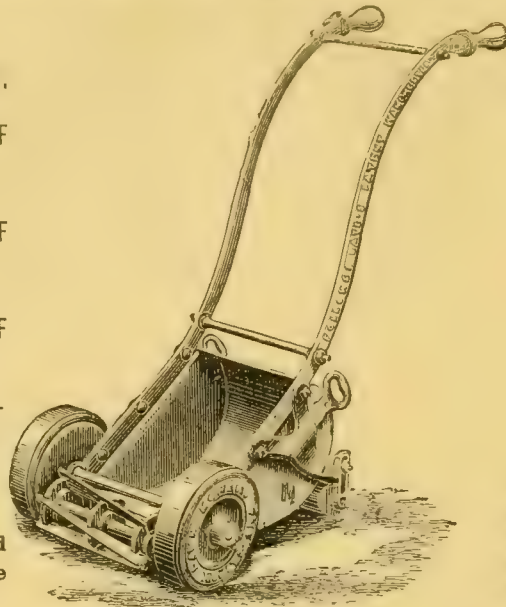
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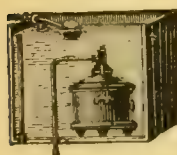
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THE GARDEN.

"This is an art
Which does mond nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

FLOWERS FOR THE BLIND.

It is more than a year since I made some remarks on "Flowers for the Sick and the Poor," and the "Flower Mission" is now a regularly organised system in this and other towns (*vide* Miss Stanley's paper in *Macmillan's Magazine* for April last). Still, I have not observed any particular notice of the blind; and for this past year, we have taken our supplies regularly to the Royal Blind Asylum, the manager informing me that no one had, as yet, thought of sending them flowers; and very much pleasure have we given during these twelve months to the inmates of that institution. Of course, for such an object, the supplies are limited to aromatic and sweet-smelling plants, of which at present there is abundance—Roses, Pinks, Stocks, Honeysuckles, and woody plants, Sweetbriar, Southernwood, Walnut; but the dry season has never let our herb beds grow, and we have had to fall back upon our winter Thyme and Rosemary, this last being the most unfailing and surest for all seasons and weathers. A hedge should be formed of it in gardens that are intended to regularly supply the blind, sick, and poor, also one of Sweetbriar; we had the border forked and loosened about the Sweetbriar, and gave it a thorough soaking; the Rosemary, on the other hand, which backs a succulent border, is enjoying the hot sun, and gives no trouble. I will name some plants that have given the blind pleasure, and which may not occur to those who have not tried, and succeeded in making a variety in their supplies every week in the year, to those deprived of the sense of sight; also the various shifts I have been put to, and the assistance I have had. There must always be a difficulty in supplying a sufficient quantity of any particular thing at the scarcest season, when one is dealing with a large or even a small public institution. For instance, it is not fair to go into a workroom containing eighteen or twenty blind workers, with only a dozen Narcissus, Polyanthus, or Hyacinths; and yet that number will, probably, clear off the whole supply of an ordinary greenhouse for one week. Our worst time occurred when the Snowdrops were over, and before sufficient Primulas of all sorts had come on (Violets, Primroses, Lily of the Valley later on, and Jessamine last of all, were four plants we could not attempt at all), and for two or three weeks, we were reduced to Sweet Bay, Rosemary, Lavender, and Thyme. One is often startled by such remarks and questions, from the blind, as these, "I saw Crocuses yesterday, but they have no smell. Snowdrops are sweet!" and "What is the colour of the flower?" At the time of the Duke of Edinburgh's marriage, they had all been out to "see" the illuminations, and were eloquent in their descriptions of what they liked best, one admiring the castle most, another a bank, or church. On applying to our two principal nurserymen I was at once most liberally supplied (one week from each) with sufficient Hyacinths and Lily of the Valley to go round the room we usually visit, and the workers in which were highly delighted, each sniffing at a fine Hyacinth and carefully going over every bell with their fingers (they always touch before they smell). The Lily of the Valley was an immense treat; all knew it by name and idea. Forced flowers for an asylum are quite out of the question, and, only at a pinch, can one ask nurserymen for them. I bethought me then of Balsam Poplar, any quantity of which I was allowed to cut in a neighbouring tree nursery. They liked the smell, but not the sticky feel to their fingers. From the moors also, I brought with me a quantity of the flowering branches of Bog Myrtle (*Myrica Gale*), which is deliciously fragrant (even more so than the leaves), and which conveniently came into bud at the scarce season; and here let me observe, for those who have eyes, the expanding of Gale flower buds in water is worth watching. Willow catkins they were delighted with, and, of the four varieties I took, at once selected the softest of them to feel over and over (velvet they were likened to), and, as they knew something about Willows, they were much interested and surprised to feel and learn that Willows had flowers. One poor woman's face lighted up, as she exclaimed, that she "did not know what they were, but she had pulled them when a girl." The Edinburgh Blind Asylum is passed by all the market carts coming from the south side of the city, and I suggested to one or two of the market gardeners, that unsold bunches of flowers or sweet herbs might be left at the asylum as they returned home. They were pleased with the idea, but I have not yet heard that any have been left—perhaps, on account of fresh unsold bunches of sweet herbs in summer being dried, and which are sure to sell in winter. It is wonderful how often, kindly well-meaning people have to be asked for and reminded of a little kindness they are perfectly

willing to give or to do; but, I quite own, from experience, that the flower, or gift, is the smallest and easiest part of the kindness. The time, trouble, thought, and punctuality, are the serious strain, and what people weary of after the first pleasant burst of feeling has evaporated, the sick, poor, and blind particularly (the latter never get better), are sure not to pass away from amongst us, and they remember the flower day with the precision of a chronometer. The only argument I have heard against "wasting flowers on the blind," was this, that a bottle of perfume would last much longer and go farther among them, and keep the flowers for the seeing sick and poor." Now, I hope this opinion will not weigh with any one who for a moment considers that the blind are deprived of the sense by which we all learn most of Nature; and, to compare a flower, pure and fresh from a field or garden, with the meritorious, but meretricious bouquets of Rimmel, is an impossibility. Then the great proportion of those in the Edinburgh Asylum have become blind (only one woman and four boys having been born so), and, therefore, have recollections of green leaves and bright flowers; and how pleased they all were to tell me that their Musk plants were growing, and their bits of Spearmint had got roots. The best arranged and ventilated work-rooms in any institution must be benefited by large basketfuls of aromatic herbs being emptied out in their midst, the atmosphere becoming purified thereby; and I am sure so must the health of each worker, who has a sprig of Thyme or Rosemary stuck in their dress to breathe over. Every public institution has its most convenient days and hours for receiving flowers. At the Blind Asylum Saturday forenoon is the best time, as they leave work early, and of course have Sunday to themselves. Cut flowers go farther in supplying the blind, because one sprig smells as sweet as a dozen; and they feel over the shape of one Hyacinth or Stock better than when a handful is given to them. From the delicacy of their touch, they can pick off any fading leaves or flowers on a spike, thus saving the donor's time. I tell them I bring them the flowers to sort and clean for themselves, not as if they were infirm patients, with hardly strength to smell the flowers laid by their side, as is often the case. I hope these remarks may remind any who have as yet overlooked the blind, that although those may be in fair health, and not in want, yet still flowers can cheer and elevate them, as well as other afflicted ones. The blind are true incurables. It seems superfluous to give a list of sweet-smelling plants suitable particularly for the object of this paper, but, at the risk of being tedious, I do so, having seen the pleasure they gave to those who can only smell and touch flowers.—*Rosemary, different sorts of **Thyme, Sweet Bay, different sorts of Arborvitæ, Rhododendron hirsutum, Gale (flowers for winter, leaves for summer), Lavender, *Southernwood, three sorts Artemisia, Spearmint, **Musk, Balm, Costmary, Sweetbriar, Woodruff, Mints (Nepeta, Melissa, Teucrium, Mentha, Origanum), Pot-herbs (usually so called), Balsam Poplar, Walnut (leaves), Willow (catkins), Myrtle, Gum Cistus, Balm of Gilead, Sweet Verbena, scented Geraniums (particularly *Odoratissimum*, Nutmeg, Lobatum and Peppermint scented, as they loved the soft, downy feel of these leaves), Heliotrope, Eucalyptus leaves, *Christmas Roses (*Helleborus niger*), *Snowdrops, Laurustinus, Arabis, *Wallflower, *Ribes, *Cowslips and Polyanthus, *Lilac, Hawthorn, Narcissus (particularly *Poeticus*), Hyacinth, *Syringa (*Philadelphus*), Buddlea globosa, *Roses (particularly Scotch and Cabbage), *Pinks (particularly double-white), *Stocks, Honeysuckle, Marigold (common yellow), Azalea, Daphne (Spurge Laurel), *Lily of the Valley, Day Lilies, Lilies (*Lilium candidum*), Mignonette, Sweet Peas, Lupins (common yellow), Carnations, Chrysanthemums (they liked the fresh smell of the leaves), and Salvia (*Grahamii*). The names with the * were decidedly the favourites, and we supplied rooted plants of those marked **. When frost sets in and plants have to be lifted, there is always a great waste of sweet leaves, which might be advantageously sent to institutions of the blind.

Wardie Lodge, Edinburgh, July 6.

F. J. HOPE.

The Fountains in Trafalgar Square.—As we write men are employed in breaking up and carting away the net-work of pipes which supplied the numerous water-squirts in one of the large fountain basins in Trafalgar Square. What changes or repairs are contemplated we know not, but one cannot see all this expensive fooling without regretting that (if we must suffer it and pay for it), it is not carried on in some out of the way nook in the parks. It is a pity to see a fine central space like Trafalgar Square despoiled by such "ornamentation." The open and precious space devoted to the wide and usually filthy fountain basins and extensive arid asphalt pavements, could of course be easily converted into a pretty garden, varied with trees, which would make the square charming to look upon, from the terraces above, and indeed from every point of view.

NOTES OF THE WEEK.

— THE unusual heat of the past week has advanced fruits considerably, but not always improved them. The great heats following heavy rains have improved the flavour of the Strawberries. Raspberries have come and gone before the heat more rapidly than ever has been known in Covent Garden. Fair Jargonelle Pears have come from France during the week, and also some Apples of an inferior class. Reine Claude Plums have come from Avignon. Tomatoes are poor and scarce. Flowers have been much forwarded by the heat; but they endure a shorter time than usual in the cut state.

— FRUIT of *Musa Champna*, a variety introduced to Syon from Trinidad, was shown at South Kensington the other day by Mr. Woodbridge, and pronounced to be remarkably rich in flavour, far superior in that respect to the ordinary kinds. The best flavoured of all the varieties of Banana grown in the tropics are of a pale rose colour; and it would be interesting to know if this colour is peculiar to a distinct variety, or whether it is merely due to favourable circumstances of growth.

— IN order to encourage a taste for horticulture among the young, the Royal Horticultural Society has caused a number of bronze medals to be struck, for presentation among successful exhibitors at the flower show of St. Botolph's, Bishopsgate, which has been long so ably conducted by the Rev. W. Rogers. This is doubtless a step in the right direction, and let us hope that the "Lindley Medal," awarded on more than one occasion, may also be struck and forwarded to those to whom it has been awarded.

— MESSRS. DOWNIE, LAIRD, & LAING have, it is reported, discovered a specific against the ravages of the Hollyhock disease (*Puccinia malvacearum*). In allusion to this subject, our attention has been called to some Hollyhocks growing in the kitchen gardens at Moor Park. These, when about half-grown, were attacked very virulently by this Fungus, nearly every leaf being destroyed by it. The disease, however, appeared to die out as suddenly as it came; young foliage pushed forth as fresh and healthy as ever; and, when we last saw them, they promised a good show of bloom.

— WE have throughout fought against the practice of placing costly fountains in our gardens, public or private, as being an objectionable way of allowing architects and sculptors to fritter away moneys which ought to be devoted to pure horticulture. The last water-squirting arrangement, that around the feet of Shakespeare in Leicester Square is, however, the most puerile and lackadaisical thing ever perpetrated. So we say again to all who seek for natural beauty and quiet grace in a garden, avoid the "garden architect," who offers you stone and water jets instead of Grass and trees, and flowers and peace.

— THOSE interested about the hardiness of the Fever-Gum tree (*Eucalyptus globulus*) will be glad to learn that it not only will grow in England, but that as far north as Fife-shire it will survive and even attain a considerable height. There is at Balmuto a tree of it about 30 feet high, growing against the residence of the well-known botanist Dr. Boswell Syme. Its age is upwards of twenty years; and, though nearly as high as the one at Powderham Castle (35 feet), it cannot, however, boast of the same girth (5 feet). It bears capsules each year, but the seeds do not ripen so far north.

— MR. G. F. WILSON, Heatherbank, Weybridge Heath, writes to us as follows:—" *Lilium californicum*, *L. Pardalinum*, and *L. puberulum* have bloomed well here planted out on the root-work and in beds. *L. Pardalinum* is most like *L. puberulum* in form, but has larger shoots and brighter scarlet on the tips of the petals; while the Lily brought by Mr. Robinson from California, and first named *L. Robinsoni*, but since considered as identical with *L. Pardalinum*, appears in every specimen I have bloomed to be at least an improved variety of this last, as the scarlet tips of the petals are much brighter, and as it is altogether a handsomer Lily. *L. Martagon dalmaticum*, with its fine head of rich purple flowers, has been much admired."

— THE Council of the Meteorological Society recently resolved to organise a system of observations of natural phenomena connected with the season, as well as of such branches of inquiry as tend to establish a connection between meteorological phenomena and vegetation. As a preliminary to carrying out this intention, they invited the various societies before which such subjects most naturally come, to nominate delegates to join a committee by whom the whole question, as bearing upon agriculture, horticulture, &c., should be considered, and to whom also any written communications should be submitted. The first meeting of this joint committee was held at the office of the society, 30, Great George Street, on Thursday, July 2, when delegates were present, and promises of co-operation read from the Royal Horticultural, Royal Botanic, Royal Agricultural, and other societies. After the subject had been fully discussed, the Rev. T. A. Preston, of Marlborough College, was requested to prepare

a list of plants to be observed, and also to draw up a report on the same. Other gentlemen were requested to prepare lists of insects, birds, and animals.

— THE prize Grapes grown by Mr. Colman at Eastnor Castle have been exhibited in Messrs. Webber's windows in Covent Garden for the past few days. The Hamburgh bunches have never been surpassed for beauty and finish.

— STOKE NEWINGTON GREEN, which has long been in a disgraceful state, is shortly to be laid out as a public park, the Islington Vestry having resolved to purchase it from the Lord of the Manor of Highbury.

— WE have received the "Natural Principles of Landscape Gardening," by Mr. J. F. Johnson, Curator of the Royal Botanic Gardens, Belfast. It is published, for the author, by Messrs. Aitchison & Sons, Belfast. We shall take an early opportunity of reviewing the book.

— WE have received from Mr. Muir, of Clovenfords, blossoms of the very handsome *Mimulus maculosus*, naturalised in that neighbourhood. It is supposed to have been thrown from some garden into the river Caddon, and to have been deposited by that mountain streamlet in the places in which it is now found.

— A DRIED collection of new kinds of Peas was exhibited by Messrs. Carter & Co. at the last meeting of the Royal Horticultural Society, together with a very interesting collection of forty-five kinds of Lettuce, including all worth culture, as well as some singular and rarely-seen varieties of that tribe of plants.

— FOUR splendid Queen Pines were sent to the last meeting of the Royal Horticultural Society by Mr. Harris. These weighed collectively 19 lbs. 3 ozs., and were perfect in shape and colour, well swelled, and in every way really noble fruit. They were the best Queen Pines we have seen this season.

— THERE is now in Mr. Chater's nursery, at Saffron Walden, a plant of *Arundo conspicua*, bearing sixteen beautiful feather-like panicles of bloom. Though this plant has been out of doors four years in the most exposed part of the grounds, its growth is very vigorous, and, even when not in bloom, the plant is attractive, its graceful foliage being of the loveliest green.

— A PLANT of *Mandevilla suaveolens* at Battle Abbey, has been growing in the open air during the past fifteen years. Cut flowers from it were shown at South Kensington on the 16th inst., and were as much admired for their pure white colour and elegant form, as for their delicate fragrance. It is one of the finest of all climbing plants for a cool conservatory.

— THE fine collection of Orchids belonging to Mr. J. Brand, of Balham, is, we learn, to be sold by auction next week. The collection contains some fine specimen *Phalenopsis*, *Angracum sesquipedale*, *Epidendrum vitellinum majus*, and many other valuable plants, among which may be mentioned *Eucharis amazonica*, in the culture of which Mr. Howard has been so successful.

— WE understand that a committee of gentlemen are occupied in getting up a testimonial to Mr. John Gibson, late of Battersea and Hyde Park. We have, however, had no official intimation of any kind from the committee or from any of its members. Mr. John Gibson was the first to modify in this country the appalling display of scarlet and yellow in our gardens, and well deserves as good a "testimonial" as can be given him.

— MR. INGRAM, Belvoir Castle, Grantham, says:—"I do not remember such a bad season as this has been for spring transplanted plants. We were deficient 4½ inches of rain at the end of 1873; we are now minus 6 inches; this is 1,000 tons per acre less than our average for nine months."

— THE Caen Academy of Science and Art proposes as the subject of the Le Sauvage prize, of the value of 4,000 francs, to be awarded in 1876, the question of the "Function of leaves in the vegetation of plants." The academy does not want simply an exposition of the present state of science on this important question; it requires, besides, from competitors, exact experiments performed by themselves, and new facts tending to throw light upon, invalidate, confirm, or modify doubtful points in the theories at present accepted. The memoirs ought to be sent to the academy before 1st January, 1876.

— AT the Vienna Exhibition there were specimens of paper made from several materials which have not hitherto been utilised for that purpose. Among these was paper from the Mulberry-tree bark, from the Stinging Nettle, and from Potato stalks. In sections of European countries where Mulberry leaves are used for feeding silkworms the remaining twigs have served only for fuel. But now, in Austria and parts of Italy, the bark is peeled off by a very simple arrangement, and from it a material prepared, from which a good quality of paper is made. In Hungary the Nettle is used with rags for making fine sketching and copying paper, and in Bohemia wrapping paper is made from Potato stalks.

THE INDOOR GARDEN.

LADY'S-SLIPPERS.

(CYPRIPEDIUM.)

Of the different species belonging to this genus, all, both hardy and tender, are favourite garden plants. They are widely distributed in both hemispheres, and in all kinds of climates, from the north of Europe, and North and South America, to Japan, India, Borneo, Java, and the Philippines. In the whole family of Orchids, there is, perhaps, no other genus which has a wider range. Botanically, *Cypripediums* are distinguished by their having two fully-developed anthers, and the lateral sepals connate, or fused together, there being only one solitary exception in *C. arietinum*, whilst popularly they are readily known by their slipper-shaped lip. One tolerably well-marked section, all the species belonging to which being tropical American, has been made by the younger

Propagation.

All the species are stemless herbs, and are readily propagated by dividing strong established masses; such off-shoots soon make blooming plants. Several beautiful new hybrids have been raised by Mr. Dominy and Mr. Seden in the Royal Exotic Nursery, at Chelsea, and also by Mr. Cross, gardener to Lady Ashburton, at Melchet Park, in Hampshire, after whom one of the hybrids is named. Other cultivators, including Mr. Pilcher, gardener to Sigismund Rucker, Esq., at Wandswoth, have raised seedlings from the chaste little *C. Schlummii*, but these are said to vary but little from the parent plant. In order to obtain seed it is necessary to fertilise the stigmatic surface of one flower with the glutinous or honey-like pollen from another flower of the same plant, or from a separate species, if a hybrid is desired. The stigmatic surface in this genus is concealed by the infolded margins of the lip, and is, generally, a thick trowel-shaped ivory-like process just below



Hardy Varieties of Lady's-slipper.

Reichenbach, a separate genus—*Selenipedium*—but in the following remarks I have grouped all the species under the older and better-known name of *Cypripedium*. The different species of *Cypripediums* are nearly as diverse in habit and mode of growth as they are in their geographical distribution; all the hardy, and some of the tropical American tender kinds, are strictly terrestrial; others have been found clinging to the face of sunny limestone rocks in Moulmein and Burmah, while *C. Lowii* belongs to a group which is strictly epiphytal. The culture of all the tender species is by no means difficult, but that of the hardy North American and Siberian kinds is just the reverse, and many have failed to get such plants to bloom except during the first season, after they have been imported. The best results have been obtained with *C. spectabile*, *C. humile*, and *C. pubescens*, while Messrs. Backhouse have succeeded in flowering the rare and beautiful *C. guttatum* and *C. irapeanum* in their nursery at York, where a broad patch of the only British species, *C. Calceolus*, also does well on rock-work.

the broad shield-like sterile anther, or staminode. Press down the lip and apply the pollen to the under side with the point of a pencil, or a quill tooth-pick will serve admirably for this purpose. The seed resembles fine mahogany sawdust, and should be sown as soon as ripe on the surface of living *Sphagnum* Moss that has become thoroughly established on the surface of a pot of fibrous peat; cover partially with a bell-glass, tilting it at the bottom so as to allow a free circulation of air. This last precaution is especially necessary just when the young seedlings make their appearance, as that is the most critical period in their growth, and many thousands of seedling Orchids never get beyond that stage. As the seedlings develop themselves they may be removed and potted off separately, and treated as recommended for established plants.

Culture of Tender Species.

These should be potted in a fresh open compost consisting of fibrous peat broken into lumps about the size of pigeons'

eggs, with the fingers; to this add about one-fifth of either dried horse droppings or cow manure, which should be collected in pastures in summer when dry and laid on a hot fire long enough to kill all insect life that it might contain. A little turfy loam may also be added in the case of the most robust-growing species, adding sufficient coarse well-washed sand or grit to keep the whole porous. The pots or pans in which the plants are to be put should be well washed and thoroughly dry before they are used, and this remark also applies to the crocks employed for drainage. *Cypripediums* do not require so much drainage as many other Orchids; indeed, about one-third the depth of the pot or pan will be amply sufficient for them. Place a thin layer of fresh Moss, or the rough fibre from peat, over the crocks so as to prevent the finer particles of compost being washed down among the drainage. The collar of the plants may be about level with the rim of the pot, and the compost should be neatly surfaced with fresh Sphagnum, which should be kept regularly sprinkled with spray from a syringe so as to induce it to grow as freely as possible. All the species require a copious supply of moisture when growing, both overhead and at the root, and they should never be allowed to become dry, as they, like many other stemless Orchids, have no decided season of rest. During the spring, summer, and autumn months they should all be regularly syringed morning and evening; and, in exceptionally hot dry weather, a gentle dewing in the middle of the day will induce that healthy vigour and fresh succulent growth so pleasing to the eye of the practical cultivator. They should be shaded carefully from hot sunshine, and free ventilation is essential, care being taken to guard the more tender species from cold cutting draughts. All these plants are more or less liable to be attacked by insect pests, especially if out of health through any irregularity in their treatment. Thrips, red spider, and the yellow aphides peculiar to Orchid-houses must all be guarded against by means of a liberal use of the syringe and abundance of fresh air. If, however, thrips and fly have obtained a foothold, eradicate them at once by repeated fumigations with tobacco-cloth or rag. It is better to fumigate gently on two or three successive evenings than run the risk of burning the foliage by filling the house too full of hot smoke. If the plants are gently sponged over occasionally with clean tepid water it will do much towards keeping them free from dust and insects. Some recommend the use of weak liquid-manure when the plants are making their growth, but beginners had better avoid such applications. Many of the species grow well in a moderately warm greenhouse temperature or in a Cattleya-house, but *C. Stonei*, *C. lævigatum*, *C. concolor*, *C. niveum*, and one or two others, do best in the warm moist atmosphere of a stove or East India house. The pretty little *C. Schlimmii* does best in a cool house with Disas and Odontogloss, and requires careful attention to prevent its suffering from thrips, which seem to have a special liking for its fresh succulent foliage.

Culture of Hardy Species.

This section is scarcely less beautiful than that containing the tropical species, from which the hardy kinds are readily distinguished by their herbaceous habit. One of the freest and most vigorous of the whole group is the white-flowered rosy-lipped *C. spectabile*; and *C. pubescens* and *C. humile* seem to do much better than any of the others, if we except *C. Calceolus*. The majority succeed tolerably well for a year or two in a cool moist peaty compost; and, if grown in pots, they should be plunged in a cold frame with a northern aspect, and protected from the mid-day sun. *C. spectabile* may be planted out in a border of peat and leaf-mould, where it will flower several years in succession if kept regularly moist and cool at the root. *C. Calceolus*, on the other hand, prefers a strong chalky loam, with an eastern aspect, sheltered on all sides from rough winds and sun. If these hardy Lady's-slippers are grown in pots, they should be well drained, as has just been recommended; and, if syringed every morning, so much the better. The pots should be surfaced with fresh green Sphagnum to prevent undue evaporation from the soil; and such surfacing also keeps the soil cool, by acting as a non-conductor. The roots should never be allowed to become dry, even in winter—an evil to which may be attributed, I fear, the

loss of many of these interesting plants. In 1842 a collection of these hardy species used to grow well in Messrs. Rollisson's nursery, at Tooting, planted in a peat border outside at the back of a Heath-house. During winter and spring they were protected by a layer of Sphagnum 2 to 3 inches in thickness.

I now propose to furnish a simple key to the species, and to add such descriptive details as may prove of use to cultivators:—

I.—*Cypripedium*.

HARDY OR TENDER.—Species, mostly herbaceous; flower-stems, leafy; leaves, thin, nerved.

Lip, yellow; § petals, linear.

1. *C. Calceolus*.—Petals, not spirally twisted; deep purple.

2. *C. parviflorum*.—Lip, depressed in front; petals, twisted; flowers, perfumed.

3. *C. pubescens*.—Lip, convex in front; flowers, not scented.

Lip, yellow; § petals, oblong.

4. *C. irapeanum*.—Whole flower, yellow; flowers, 4 inches across.

Flowers, rose-coloured; § petals, oblong.

5. *C. macranthum*.—Petals, shorter than the inflated lip.

6. *C. ventricosum*.—Petals, longer than the lip; flowers, much deeper coloured.

Lip, rosy; § sepals and petals, white.

7. *C. spectabile*.—Sepals and petals, not spotted; stem, 12 to 14 inches high; three to five-leaved.

8. *C. guttatum*.—Sepals and petals, spotted; stem, 4 to 6 inches high; two-leaved only.

Lip, white; § sepals and petals, green and red.

9. *C. candidum*.—Lip, pure white; sepals and petals, green, streaked with reddish-brown.

Lip, white and rose; § lateral sepals, free.

10. *C. arietinum*.—Lip, white, chequered with bright rose; the lower sepals, not coherent.

Lip, rose; § leaves, two, radical.

11. *C. acaule*.—Lip, large, rosy-purple, furrowed in front; flower-stem, not leafy.

12. *C. palmifolium*.—This is a tall-growing species, not at present in cultivation.—*C. cordigerum*, a native of Northern India. This Lindley considers to be a white-flowered form of our own *C. Calceolus*, a widely distributed species, being found in Europe, Daburia, and, according to Thunberg, in Japan.—*C. passerianum* is described and figured in Hooker's "Flora of North America," t. 206, and is one of Richardson's species, being synonymous with his *C. parviflorum*, described in "Franklin," appendix i., 340.—*C. montanum* is another North American species, described by Lindley in his "Genera and Species of Orchidaceous Plants." It has a white inflated lip, similar to *C. spectabile*, and long narrow sepals nearly 3 inches long. All the above are little-known terrestrial species, probably not at present in cultivation.

II.—*Cypripedium*.

TENDER SPECIES.—Leaves, leathery, radical, distichous, persistent; flower scape, leafless, one or many flowered.

Foliage variegated.

13. *C. venustum*.—Lip, bronze-coloured, with deep green veins.

14. *C. concolor*.—Scape, one to two flowered; flowers, pale yellow.

15. *C. niveum*.—Flowers, white, with purple dots.

16. *C. javanicum*.—Lip, olive green, not veined.

17. *C. barbatum*.—Lip, deep purple; petals, with shining hairy warts along their upper margins.

18. *C. argus*.—Flowers, on long scapes, like *C. Hookeræ*; petals, 2½ inches long, profusely covered with eye-like spots.

19. *C. purpuratum*.—Dorsal sepal with revolute margins.

20. *C. Hookeræ*.—Flowers, on scapes 16 inches high; upper sepal, not striped; variegation very distinct.

21. *C. superbiens*.—Petals, 3 or 4 inches long, white striped with green, and spotted with dark brown.

22. *C. Dayanum*.—Petals, white veined with purple, not spotted.

Green leaves. Flowers, solitary.

23. *C. insigne*.—Upper sepal, green and white, spotted with brown or purple.

24. *C. villosum*.—Whole flower of a warm brown colour, shining, as if varnished.

25. *C. hirsutissimum*.—Petals, green at the base, dotted profusely with brown-purple, and slightly twisted at the apex.

26. *C. Fairieanum*.—Petals, curved downwards like an S; upper sepal, heavily streaked with purple.

Green leaved. Several flowers on a scape.

27. *C. Lowii*.—Scape, 2 to 3 feet long; three to five-flowered;

petals, purple and yellow, 3 to 4 inches long, spotted with brown at the base.

28. *C. Schlimmeri*.—Flowers, small, white, with a rosy lip; petals, sometimes spotted with deep rose.

29. *C. caudatum*.—Petals, linear, twisted, 15 to 30 inches long.

30. *C. Stonei*.—Petals, ligulate twisted; scape, sepals, and ovary, smooth.

31. *C. lævigatum*.—Scape, sepals, and ovary, hairy.

32. *C. caricinum*.—Leaves, grass-like; flowers, greenish; petals, 3 to 4 inches long, twisted like a corkscrew.

33. *C. glanduliferum*.—Petals, acute, set with two or three hairy glands.

34. *C. Parishii*.—Petals, blunt at their apices, also with hairy glands.

35. *C. longifolium*.—Flowers, green and purple, rarely more than one open at once on the same spike, with bracts 3 inches long.

36. *C. Roezli*.—Similar to the last; petals, purple; leaves, twice as broad.

There are several hybrid forms belonging to this section of the group, and I have thought it would be best to add these by themselves, as follows, with their parents' names in parenthesis. They are, in most cases, intermediate:—

C. Sedeni (*C. longifolium* × *C. Schlimmeri*).—Flowers, deep rose, 3 inches across; lip, crimson, white inside, spotted with rose.

C. Harrissianum (*C. barbatum* × *C. villosum*).—Flowers, shiny, as if varnished; foliage, variegated.

C. vexillarium (*C. Fairieanum* × *C. barbatum*).—Flowers, resembling the first named parent; foliage, variegated, like *C. barbatum*.

C. Domini (*C. caudatum* × *C. Pearcei*).—A large flowered species, with the long petals of the first named parent.

C. Ashburtoniae (*C. insignis* × *C. barbatum*).—Foliage, slightly variegated; flowers, resembling those of *C. insignis* without the spots. The produce of this cross varies very much, the foliage of some of the seedlings being nearly green, while others are almost as strongly marked as in *C. barbatum*.

I.—Cypripedium.

C. Calceolus (Common hardy Lady's-slipper).—This is one of the rarest, and, also, one of the most beautiful, of our native Orchids. It grows about a foot in height, and bears one or two showy flowers at the apex of the strongest leafy stems. Although a British species, the plants now in cultivation are mostly imported from the Swiss Alps. The sepals are of a deep purple tint, the petals being narrow, tapering with wavy margins. These are also of a purple colour tipped with yellow at their apices. The lip is rounded or swollen, and, being of a clear golden-yellow colour, contrasts well with the dark sepals and petals. It is found in woods in Russia, Asia, and Eastern Europe and the Arctic Circle, but is more sparingly distributed over Western Europe; in Britain it is almost, if not quite, extinct. One of the best known habitats of this plant was Castle Eden, Dean, Durham, and it has also been found in Yorkshire. According to Thunberg, it is also a native of Japan.—Rich. Fl. Germ. 33, t. 496; English Bot. I., t. 1.; Paxt. Mag. 3, t. 247.

C. parviflorum (Small-flowered Lady's-slipper).—This has been more than once referred to the last-named species, from which, however, it is readily distinguished when both are seen side by side. The plant is similar in size and habit, but the lip is larger and distinctly flattened or even depressed in front, and the flowers are also delicately perfumed. The sepals are of a rich chocolate-brown colour, while the slender, wavy, or twisted petals are green at the base and streaked and spotted with dark brown. The lip is of a clear yellow colour, with a row of crimson or reddish dots around the mouth. The leaves are of a fresh apple-green; and the plant, although rare in even the best collections, is well worth introduction and careful culture. It is a native of Canada and, probably, of North America.—Bot. Mag. 23, t. 911; Linn. Trans. I. 2; Bot. Mag. 57, t. 3,024.

C. pubescens (Hairy Lady's-slipper).—This is a free-growing species, both stem and foliage being covered with whitish hairs. It is very distinct from both the last-named kinds, and grows well treated as a pot plant in a shady cold frame. The sepals are of a creamy-yellow colour, striped with bright red; petals narrow, very much twisted, also yellow streaked with red, while the lip is of a clear golden tint. In shape the flower reminds one of *C. Calceolus*, but it is readily distinguished from that species by the yellow sepals and twisted petals, and also by the flower being scentless. It is a native of North America, and common in good collections. It is also called *C. Calceolus* by Walt. and *C. flavescens* Red.—Lodd. Cab., t. 895; Hook. Bor. Amer., t. 206; Sweet Fl. Gard., 71.

C. inapeanum (Pelican-flowered Cypripede).—This is a very fine large-flowered species, recently re-introduced to our gardens by

Messrs. Backhouse, of York, with whom it has flowered. In shape, the flowers resemble those of *C. spectabile*. They are fully 4 or 5 inches across the fully-expanded segments, and are borne one and two together on the leafy stems. The colour is a bright golden-yellow throughout, and the lip is blotched within with bright reddish-crimson, and in shape reminds one of some of the large-flowered *Calceolarias*. It is a tender species, and does well potted in peat-loam, on a well-drained bottom. It requires plenty of water at the root when growing, and an airy atmosphere suits it better than a close one. It is a native of the Savannas, or great natural meadows of Upper Mexico, where it is found at an elevation of from 2,000 to 5,000 feet.—Bot. Reg. 32, t. 58; Flore des Serres, 3, t. 186.

C. macranthum (Large-flowered Lady's-slipper).—This rare plant has often been introduced, although we do not now know whether or not it is in cultivation. It grows from 6 to 12 inches in height, and bears one or two rosy-purple flowers at the apices of the stems. The petals are striped, and the lip, which is inflated, is distinctly netted with dark veins. It is a native of Siberia, and is well worth general culture.—Bot. Reg. 18, 1,534; Bot. Mag. 56, t. 2,938.

C. ventricosum (Inflated Lady's-slipper).—This is another rosy-purple-flowered species, much resembling the last in general appearance, but easily distinguished from it by the petals being shorter than the lip, a very unusual occurrence in this genus. The lip itself is shaped like that of *C. macranthum*, but it is of a much deeper colour. It is a native of Siberia.—Sweet Fl. Gard., II, t. 1; Rchb. fl. Germ., 13, t. 497.

C. spectabile (Showy Lady's-slipper).—This is one of the most beautiful of the hardy species, and one which succeeds perfectly well planted out in a cool peaty compost, sheltered from the mid-day sun. It also makes a splendid pot-plant plunged in a cool and partially shaded frame. The stems rise from a foot to 18 inches in height, and bear from one to three large flowers at their apices; both leaves and stem are covered with short white silky hairs. The flowers, which measure about 3 inches across, are of pearly whiteness, the rounded lip being suffused with bright rose around its mouth. It is a native of the United States and North America, and should be grown in every collection of moisture-loving hardy plants. Also known as *C. album*, Ait.; *C. Calceolus*, Linn.; *C. canadense*, Michx.; *C. hirsutum*, Mill.; and *C. Reginae*, Walt.—Linn. Trans. I, 3; Bot. Reg., 20, 1,666; Sweet Fl. Gard., 240; Wooster's Alp. Pl., t. 1.

C. guttatum (Spotted Lady's-slipper).—This charming little plant resembles *C. acule* in habit, but has snowy flowers blotched with purple. It has been repeatedly introduced both to this country and the Continent, but received little attention until quite recently, when the plant has again been introduced, and, I believe, has flowered in Messrs. Backhouse's collection at York. The whole plant is only a few inches high, its short stems being two-leaved. It is a native of Siberia, North America, and Northern Russia, where it grows in swamps and spongy bogs.—Flore des Serres, 6, 573.

C. candidum (Milk-white Lady's-slipper).—A pretty little species, similar in habit to *C. spectabile*, growing about a foot high, and bearing a solitary flower at the apices of its leafy stems. Its sepals and petals are white or greenish-white, more or less streaked and shaded with pale brown. The lip, which is inflated, is pure white. It is not unfrequently imported, and is well-deserving of culture. A native of boggy marshes, and extending into Canada to the northward, and to the Platte and Rocky Mountains to the west.—Bot. Mag. t. 5,855.

C. arietinum (Ram's-head Lady's-slipper).—This curious and interesting little plant is seldom seen in cultivation, although it has frequently been introduced to our gardens. Botanically, it is remarkable as being the only species with free lateral sepals, and this character serves to distinguish it from all the other species at present introduced. The lip tapers from the mouth to a blunt point; the colour being white, curiously chequered with bright rose, like some of the *Fritillarias*. The upper sepal is ovate, the lower sepals and petals being nearly linear, of a dull green colour, streaked with reddish-brown. The flowers, which are solitary, scarcely measure an inch across, and are not showy, although the plant is worth culture where variety and botanical interest are appreciated. It is a native of Canada.—Bot. Mag. 38, t. 1,569; Sweet's Flower Garden, t. 213.

C. acule (Stemless Lady's-slipper).—This is one of the commonest of hardy Lady's-slippers, and is frequently met with in good collections of hardy plants. Treated as a pot-plant in a cool frame, it does remarkably well, and blooms freely every spring along with *C. Calceolus*, *C. spectabile*, and *C. pubescens*. It grows well in an open compost of spongy peat, and, like its congeners, must have a copious supply of water at the root. The whole plant is 6 or 7 inches high, having two broad green leaves at the base, and a solitary nodding flower borne on a slender scape. The lip, the most con-

spicuous part of the flower, is rosy-purple, netted with darker veins, and curiously folded inwards in front—a characteristic peculiar to this species, which is sometimes known in books and gardens as *C. hamile*. It is a native of North America, and is perfectly hardy. —Bot. Mag. 6, 192; Lam. Encycl. 729. F. W. B.

MIMULUSES INDOORS AND IN THE OPEN AIR.

THESE, though handsome, free-flowering, and easily-grown plants, are seldom met with now-a-days—except, perhaps, in an odd corner of some old-fashioned garden. Though, however, the taste for novelty has unhappily driven them into the background, they are, nevertheless, well worth attention. With the common Musk we are all well acquainted; and, as a window-plant, *Mimulus cardinalis* makes a good companion to it; for, though taller, it is equally fragrant, and its bright scarlet flowers are more showy than the small yellow blooms of the Musk. Both these Mimuli are quite hardy, and well adapted for borders. Many of the large-flowering varieties of *Mimulus* make beautiful pot-plants for the summer decoration of the greenhouse and conservatory, where they keep up a succession of bloom from the middle of June until August. A mixture of clay, loam, and a good quantity of silver or river sand suits them admirably. They should always be kept in a cool place, and liberally supplied with water. When done flowering, they should be placed in some sheltered corner outside, or in a cold frame, where they will remain all winter, and should be allowed to start into growth undisturbed until the young shoots are an inch long; they should then be taken out of their pots and divided if increase is wanted, or the whole plant may be re-potted in any desirable sized pot and replaced in their old quarters, to remain until ready for the purposes for which they may be required. Plenty of water while growing is, with Mimuli, more a necessity than any particular selection in the way of site or other requirements; indeed, they belong to a class of plants that readily accommodate themselves to circumstances. When growing them extensively some years ago I found the following varieties best suited for pot culture, viz., *M. aurantiacus splendens*, a kind with a golden-yellow ground blotched with crimson, and beautifully spotted in the throat; *M. albus elegantissimus*, a very finely spotted variety, with white ground, the lobes and margins being marked with crimson; *M. cupreus*, orange and crimson; *M. cupreus speciosus*, a kind with larger blooms than the cupreus, and more richly spotted with deep yellow and bronze-crimson; *M. coccineus*, fine scarlet; *M. guttatus* and *M. luteus*, both bright yellow; *M. exquisitus*, a sort with a beautiful orange ground brilliantly edged with crimson and elegantly spotted; and *M. meteor*, orange, with large violet and bronze-shaded blotches. The blooms of many of these have a peculiar musky scent, and are as exquisitely marked as those of any herbaceous *Calceolaria*. They look well when dotted here and there amongst other flowering plants, or placed together in groups; but those who have only seen them, even at their very best thus artificially arranged, cannot form any conception of the grand effect which they produce when grown in great natural masses. There are large patches of the beautiful yellow and crimson *M. maculosus*, growing wild in many of the quiet marshy nooks of the river Caddon, close by here, a mountain rivulet, the banks of which are richly clad with floral gems, such as wild Orchids and Irises. The Irises, like the Mimuli, grow in large clumps by the sides of the stream and in the quiet side pools of water; though their fine heads of bloom rise to a height of 3 and 4 feet above the surface, and have a fine appearance, still the Mimuli are the most attractive. I never saw the latter bloom in such profusion, nor so richly deep in colour as here. *M. maculosus* is not indigenous to this quarter, but has been cast out of some garden and deposited by the river in the places in which it now grows. With this variety alone, not to speak of other kinds, or of the greatly improved sorts which have lately been introduced, what an amount of embellishment might, with very little trouble, be given to the sides of lakes, ponds, and streams, and other places, in which little vegetation of an ornamental character will grow. In such situations Mimuli would delight. They thrive well with their roots entirely and constantly

covered with water, the foliage and flowers being allowed to float on the surface, and are exceedingly effective, either by themselves or mixed with other aquatics. J. MUIR.

Clovenfords.

Hypoxis Rooperi.—This rare and beautiful plant is just now flowering in a cool house at Kew. In habit it is not unlike *Vellozia* (*Talbotia*) elegans, the deep green tapering leaves being arranged in three rows, or rarely distichous, their margins being set with white hairs; the flowers are stellate, each as large as a shilling, and are borne at the apex of a flattened scape, about a foot high; their colour is a deep bright golden-yellow, similar to that on the lip of *Oncidium bifolium*. There are several species in this genus well worth general culture. They are mostly natives of the Cape of Good Hope, and grow well either in a greenhouse or cool frame. *H. longifolia*, a native of Algoa Bay, has narrower leaves, 16 or 18 inches in length, and flowers over an inch across, of a rich yellow colour. It is figured in Bot. Mag. t. 6,035.—B.

Orchids in Flower at Kew.—A plant of *Oncidium Lanceanum* now bears a fine spike of richly-tinted flowers, the sepals and petals of which are rounded and slightly wavy along their margins, and of a dull greenish-yellow spotted with brown; the lip is richly coloured with a shaded band of purple, the apex being nearly white. This, though an old-fashioned species, is one of the finest in the genus, and the spike on the Kew plant is one of the best we have seen. Among the *Phalænopsids*, *P. grandiflora* and *P. rosea* (*equestris*), and *P. Lud-demanniana* are in bloom. *Dendrobies* are represented by *D. Pierardii*, one of the most graceful of all the species when well grown, and a plant of the showy and distinct "Mayflower" of Ceylon, *D. McCarthiae*. *Trichopilia albidia*, also now in flower, is deliciously scented, the perfume being like that of the flowers of *Narcissus poeticus*; its crisped or undulated sepals and petals are very narrow, from 2 to 3 inches in length, and of an apple-green tint; the lip is pure white, the margins being slightly revolute. This plant bears from three to five flowers on a lax erect or drooping spike, and is grown in some gardens under the name of *T. fragrans*. The latter is, however, a distinct plant, all the divisions of the flower being of crystalline whiteness. A small plant of *Dendrochilum filiforme* bears two or three slender pendent spikes of delicate green flowers, which are arranged in two rows along the hair-like scape, and closely resemble golden flagree work in the delicacy with which the segments overlap each other. One of the most curious of the Orchids now in bloom here is *Acranthus arachnites*, a native of Madagascar. It resembles a *Saccolabium* in habit, having deep green distichous leaves, the flowers being solitary on long slender-nodding or pedent scapes. The sepals and petals are curiously curved, the lateral sepals being gibbous and concave, like those of *Sarcopodium*. The whole flower is of a pale greenish-yellow colour; and, although not showy, extremely interesting on account of its peculiar structure.—F. W. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Lapageria and Shade.—I know not why this does not do well with me, unless it is that my greenhouse is in too sunny a place. Does the plant like shade?—H. E. [Partial shade is considered one of the conditions of successful *Lapageria* culture.—Ed.]

Unusually Fine Japanese Primroses.—My plants of this Primrose have flowered splendidly with me this season. I measured the tallest of them, and found it to be 31 inches, and it bore seven whorls of magnificent flowers. None of my plants, of which I had 300, were under 18 inches in height, and among them I had a variety of colours.—ANNIE OWEN. [Were they in the open air?—Ed.]

Vitis tricuspidata.—A plant of this elegant cool greenhouse, or rather hardy climber, should be grown in every cool corridor or conservatory, where a vigorous growing plant is desirable. Grown under these conditions and planted out in a moderately rich border, it develops very fine foliage of a bright bronzy-green colour, and is one of the very best of foliage plants for such purposes.—B.

Ismene calathina.—This beautiful *Amarylidaceous* plant is nearly related to *Crinum* and *Pancratium*, and, like them, bears its flowers in clusters at the top of a more or less flattened scape. Its segments and corona are of pearly whiteness, and the whole flower is most deliciously perfumed. The corona is irregularly six-cleft, the segments being fimbriate or fringed, and another peculiar point in the structure of the flower is that of the filaments being turned inwards at right angles, something similar to the style in *Gloriosa*. This *Ismene* grows freely in any light sandy compost; it flowers in May and June, and is much valued on account of its sweet-scented flowers.—J. M.

A Yellow-flowered Pelargonium.—It may interest your correspondent, M. Jean Sisley, and others, to know that *P. oblongatum*, a large-flowered species from the Cape, is now blooming freely in the Royal Gardens at Kew. It has a thick swollen root-stock, from 2 to 3 inches high, and is clothed, before flowering, with a few short stalked oblong or slightly heart-shaped, coarsely jagged leaves. These fall off before the compound flower-spikes appear. It is a variable plant, some of the flowers being of a creamy white, while others are deep lemon-yellow, with purple streaks on the upper segments. It is worthy of attention as a decorative plant, inasmuch as it is a profuse flowerer. A good figure of it will be found in the Bot. Mag., t. 5,996.—B.

THE FLOWER GARDEN.

MARSH MARIGOLDS (*CALTHA*) AND *FICARIAS*.

ALL those who care for hardy spring flowers cannot afford to dispense with the aid of these. The Marsh Marigold (*Caltha palustris*) that in early spring "shines like fire in swamps and hollows grey," is one of the finest hardy plants we possess, though it is so frequently met with in wet meadows and by the stream-side that there is little need to give it a place in the garden, except on the margin of water, where it is always welcome. Its double variety is, however, a garden plant of much value, and well worth a place in a moist rich border, or, like the single form, by the water-side, or in the artificial bog. This double Marsh Marigold is frequently seen in the London flower-market in spring. There is also said to be a double variety of the smaller *Caltha radicans*, which differs from the common plant in being about half the size, and by having a creeping tendency. Everybody knows the common *Ficaria* of our woods, with its myriads of polished golden flowers in spring. The white and double forms are well worthy of garden culture. Still finer, however, inasmuch as it is twice as large, is the, as yet, uncommon *Ficaria* or *Caltha grandiflora* (*Calthæfolia*). This fine species is a native of southern

England, though rarely—*Aquilegifolium*—hung its pretty lilac flowers everywhere, and I noticed that they were of a deeper lilac than those in cultivation. The sulphur Anemone (*A. sulphurea*) was perfectly lovely, far surpassing the *Adonis vernalis* we love so much as a spring flower in our borders. The prettiest of the Columbines is *atrata*, so common in this part of the Engadine. Though apparently so distinct from *vulgaris*, Grenier says of it, in his "Flora of the Jura," "I have seen this fine variety return to the normal conditions after two years of cultivation." *Aquilegia alpina*, with its solitary noble blue flower, grows plentifully on the skirts of wooded tracts up the mountain sides. Of the Poppies, *Papaver alpinum*, and the rarer *pyrenaicum*, occur in the Grisons on Piz Languard, and some of the Bernina Mountains. These are lovely in their Alpine homes. Among the Cruciferæ, I would especially notice *Arabis cærulea* among the higher Alps. Its blue flowers are charming, and vie with the *Aubrietia*, which it somewhat resembles. Two Violets (one perfumed like our Sweet Violet) may be met with around Samaden—*Viola pinnata* and *V. mirabilis*. The pinnate leaves of the former sufficiently characterise it, they are so elegantly multipartite. *V. mirabilis* is a remarkable plant; the first that appear are sterile, large, with pale-lilac petals, highly fragrant, and the caulinary flowers are apetalous and



Ficaria valthæfolia (one-third natural size).

France, and was introduced to our gardens some years ago by the writer, who gave some plants to Mr. Parker, of the Exotic Nursery, Tooting, who has since increased it abundantly, and cultivated it with success as a border flower. It is quite hardy, and thrives to perfection in ordinary open border soil. It is, according to a writer in the *Revue Horticole*, as valuable a plant as the Spring *Adonis* (*A. vernalis*). Mr. Parker's plants were, during the past spring, 15 inches high, and densely covered with large showy polished golden flowers. W. R.

FLOWERS IN THE ENGADINE.

It was about the middle of July, 1871, that I visited the Engadine, just when the Alpine flowers were in all their glory. I fixed my abode at Samaden, induced to do so by the variable nature of the soil that clothes the heights above the village, at one time consisting of glacier silt, at another giving indication of calcareous admixture. Out of upwards of 200 interesting plants that I collected, I shall choose the more local and remarkable. I shall begin with the Ranunculaceæ. The Alpine Clematis (*Atragene alpina*) clothed the bushes with its climbing stems and deep violet flowers; it grows in all its beauty above Samader. A *Thalictrum* we sometimes see in cultivation in

fertile. Among the Caryophyllaceæ, *Dianthus superbus* and *Silene nutans* deserve mention. The latter, indeed, is our Nottingham Catchfly, always indicative, I believe, of the chalk formation. *Hedysarum obscurum* is a conspicuous flower around Samaden, edging the sides of the mountain pathways. This and the lovely *Phacelia* are among the more attractive of the Papilionaceous flowers. You recognise many of our cultivated Honeysuckles in the wooded dells of the Engadine—among them *Lonicera cærulea*, *alpigena*, and *xylosteum*, which last we surely can only claim as a stray in Great Britain. Samaden and Pontresina are exceedingly rich in Compositæ. I need only mention, to prove my assertion, such plants as *Senecio abrotanifolius* and *carniolicus*, *Achillea moschata*, that yields the *Espirt Diva* of the Engadine, *Saussurea discolor*, *Hieracium albidum*, *Artemisia mutellina*, *Serratula Rhaeticum*, with many others. Among the Lentibulariaceæ I found *Pinguicula alpina* and *P. leptoceras*, a gem of beauty, growing in Val Bevers. *P. alpina* differs in colour from others; the corolla is whitish, marked in the throat with two yellow spots. The Primulas come next, and they are well represented in the neighbourhood of Samaden. *Primula integrifolia*, *P. Moritziana*, *P. viscosa*, *P. latifolia*, *P. longiflora*, and *P. Cœnensis* all occur in the Grisons, together with their little cousins, the Androsaces, of which *A. glacialis*

is, perhaps, the most lovely. Who can do justice, again, to the Gentians? Fully a dozen of these blue stars of earth are here, and you know not which most to admire as you walk over carpets of their flowers; the taller ones are on the slopes of the hills—*G. lutea*, *purpurea*, *punctata*—and many a time, when weary of mountain-climbing, have I cut off slices of the root, to revive and sustain me for further exertion. Among the Boraginaceæ I found *Cerinth alpinum*, that strange-coloured plant, both in leaf and corolla, where yellow and violet are made to blend and harmonise; *Eritrichium nanum*, with its little cushions of blue hiding its silky leaves—the very loveliest of our Forget-me-nots! How it grows on Piz Languard, braving the cold and the blustering winds. Among the Scrophulariaceæ—that anomalous group—the genus *Pedicularis* shows to advantage around Samaden. The Labiates offer you *Horminum pyrenaicum* that reminded me, somewhat, of *Salvia patens*, and *Dracocephalum Ruyschianum*, and the rarer *Austriacum*, that occurs, I believe, only in the Grisons and Valais. I must not forget to mention *Daphne striata*, a richly fragrant *Daphne*, that grows on the hilly slopes of Samaden and Val Bevers; the flowers are light pink, and have a long tube that is striate throughout its length; hence the name. As I climbed from Val Bevers up the slope to the summit of the plateau that overlooks Samaden, the rich perfume of this *Daphne* was almost overpowering. The shrub grows about a foot high, seldom more. Among the Liliaceæ I noticed, plentifully, *L. Martagon*, *L. bulbiferum*, and the pretty and delicate *Lloydia serotina*, growing and flowering in crevices where the granite silt afforded it root-hold; it looks almost like a miniature *Crocus*, its perianth being striped with rosy-red externally; the root-bulbs are very small. The *Pinus Cembra*, among Conifers, fruits in Val Bevers to perfection; the nuts are commonly used at dessert in the winter. In the summer, the trees were loaded with their bluish-coloured conspicuous cones.

PETER INCHEBALD.

The Lodge, Hovingham, York, June, 1874.

BEAUTIFUL AND RARE IRISES.

By MAX LEICHTLIN.

It seems to me that *Iris susiana* is not so difficult to manage as other species in the same group. Every spring, my greenhouse is gay with potfuls of *I. susiana*, each plant of which throws up from three to four flowers. Some time after flowering I keep them nearly dry, in order to give them a season of rest. I either plunge the pots or turn out the plants in some place where I can protect them from rain by means of a frame put over them, leaving the underground moisture alone to keep the plants alive until the end of August, when they have matured their rhizomes and can be started afresh. As regards soil, they are not very particular, but if they have any preference, it is for a loamy mixture, say, one part loam, and the other parts leaf-mould, sand, and decomposed cow-dung. I do not believe that they can be forced. Besides, the species named by Mr. Elwes (see p. 499) there are numbers of others, scarcely known, which well deserve cultivation. *Iris lævigata* (Fischer) (syn., *Iris violacea*, Klatt) is a fine purple-flowered kind and perfectly hardy; *Iris juncifolia* (Xiphion) is one of the most brilliant of the race, its flowers are of the brightest yellow imaginable, and comparatively large; but above all, *Iris setosa* (Pallas) and its varieties ought to be more generally grown in England. This species is better known to horticulturists under the name of *Kæmpferi*, and the large and double flowered varieties, produced by the Japanese, and also, of late, in some European gardens, are truly magnificent; the flowers appear rather flat, presenting the outer segments in their entire dimension; the colours are very striking, they vary from white to lilac and violet, and from sky blue to indigo, brown, and blackish-maroon; they have but one defect, and that is, they often do not flower the first year after transplantation; the second year, however, they amply reward all who patiently wait for them. To grow them well and have plenty of flowers they should be planted in peat, and should be left undisturbed; they are perfectly hardy. *Iris nepalensis* (Wall.), which is considered, by competent authority, to be an Indian form of *Iris germanica*, is also a very beautiful kind,

which flowers very profusely in May, the inner segments of the flower (which is large) are of a bright sky blue, and admirably contrasts with the violet-blue, yellow-blotched, and bearded outer segments. In order that it may bloom profusely it wants a rich soil. *Iris tectorum* (Maximowicz) (syn. *Iris tomiolopha*, Hance), is not so showy as that just named, yet it is a very interesting kind, which, if planted in a sunny warm situation, will flower very abundantly, and show off its strongly crested blue and dark blue blotched flowers to great advantage. A rich soil, much sun, and some dampness, are the conditions under which it succeeds best. In Japan it grows on the top of straw-covered house-roofs, feeding on the decomposing straw, and exposed to sun and weather all the year round. Before long our collection of Irises will be enriched by the addition of some showy kinds from Asia Minor and Japan. I hope to flower some of the Japanese kinds in 1875, when they will be properly named and identified.

SAXIFRAGES.

By J. C. NIVEN, Botanic Gardens, Hull.

The Ligulate Group.

To anyone who is unacquainted with those structural organs upon which the relationship of plants, one to another, may be said to depend, it must be a matter of no little difficulty to recognise why plants so entirely distinct in foliage, flower, and habit of growth as this section presents, should be relegated to the over-grown genus *Saxifraga*, rather than formed into an independent little genus of its own. Haworth in his "*Megasea*," and Moench in his still more familiar "*Bergenia*," recognised the claims of this ligulate section to such a distinction, and our Saxifragean monographist, Engler, endorses the same after a negative fashion, by ignoring it altogether amongst the various sections into which he divides the old genus. Possibly he found, as others have done, both before and since, that the various species which constitute this section are in a lamentable state of confusion. In my endeavour to analyse it, I must only hope that I may escape making confusion worse confounded. Let me, then, first explain why we call this the "ligulate" section. I have seen it more than once Anglicised as the strap-leaved group of Saxifrages, but this is clearly a misnomer, as the outline or shape of the leaves is by no means such as would justify this descriptive title. If you remove one of the leaves with its foot-stalk complete, you will find at the base a stipulaceous appendage, at first somewhat membranous, but, as it acquires age, becoming quite leathery in character. These stipules, for such I take them to be, not only form a perfect sheath round the inner leaves or bud, but are also prolonged upward, very similar to the ligulate stipules of the Grasses—hence the true origin of the name. All the species are characterised by having large undivided leaves, of a leathery consistency, not fleshy, as the unfortunate name *crassifolia* would lead one to imagine. These are attached to a stout stem, that either runs along the surface of the ground, or sometimes grows erect, which stems often represent the growth of a series of years, branching, of course, as the process of flowering goes on. As was the case with our wandering friends (geographically a misnomer), reviewed in my last article, so these likewise have but a comparatively local distribution. They are, in fact, confined to the Himalayas and the far-east mountains of Siberia, and possess no European or new world representatives—at least none have as yet come under the ken of the botanist.

S. crassifolia of Linnaeus, claims first notice on account of its priority of introduction, dating back, as it does, to the time of Solander, about the year 1765. Its leaves are large, broad, and obovate in shape, with the base tapering down the sides of the petiole. The margins are slightly indented, and perfectly free from hairs, as also is the surface of the leaf; its flowers are produced in dense panicled cymes, rising from the terminal shoots in showy pendent masses; they are of a light rosy colour with the slightest lilac tint, and as they are produced in the months of March and April—in spite of the somewhat coarse appearance of the leaves—they form a very gay and useful accessory to the beauty of the spring garden. It is a native of the mountains of Siberia.

S. crassifolia var. *ovata*, as the name indicates, has oval leaves, the blades scarcely narrowing at all into the foot-stalks. It

throws its bloom well up, and is of a deep rose colour. For decorative purposes this variety will almost vie with *S. purpurascens*. It is, I think, similar to the variety known as *rubra*.

S. crassifolia var. *orbicularis*, sometimes dignified as a species, but I am disposed to consider it as nothing more than a small growing form, with the leaves rather broader than those of the previous variety, and a more branching habit. A free bloomer, producing an abundance of light rosy flowers, which are well elevated above the foliage.

S. cordifolia of Haworth, is by far the most frequently met with in cultivation, and, as regards nomenclature, is as often recognised by the former title as by its correct one, which it obtains from the heart-shaped character of the leaves. Compared with *crassifolia*, the leaves are much larger, nearly as broad as they are long, and distinctly heart-shaped at the base, also indented along the margin with a series of rounded little notches. The inflorescence is similar to the last, but produced in bolder masses; the individual flowers are larger, not so pendent, and of rose colour without the lilac tinge. This is the plant so frequently met with in old shrubberies, where it grows in enormous patches, holding its own well in the battle of life against all comers. It thrives under trees, enjoying the summer shade they afford, and gladdens the eye with the masses of pink flowers in early spring. It is a native of Siberia, and appears to have been introduced about the same time as the last species, but overlooked by Linnæus, or perhaps considered only as a variety.

S. ligulata of Wallich is a Nepal plant with broadly obovate leaves, slightly crispate at the margin and distinctly, but not densely, ciliated, the upper and under surfaces are glabrous. The flowers are produced in small cymose panicles, white, with a rosy tint towards the margin of the petals; the anthers, before expansion, are of a deep crimson colour, which adds much to the beauty of the flowers. Coming from Nepal and with the tendency to very early spring growth, it is liable to suffer from frosts; this form of injury occurring in three or four consecutive seasons so weakens the plant as ultimately to kill it; care, therefore, should be taken to give it a nice sheltered situation, where it may also have the benefit of a bit of shade.

S. ciliata of Royle.—Under this title, two plants, perfectly distinct, are figured respectively in the *Botanical Register* and the *Botanical Magazine*, the former represents a plant with leaves devoid of hairs, except at the margin, where they are densely arranged, and hence give rise to the appropriate specific title; the latter represents a plant whose entire leaf surface is covered with an array of erect somewhat bristly hairs, rendering the ciliated character quite inconspicuous. Which then is the correct one? Seeing that the most learned of doctors differ, I may well hesitate to give an opinion. One thing is certain, they are distinct plants; Royle, himself, in his description, says that the leaves are sometimes suffused with scattered hairs over the surface both above and below, but may it not be possible that he has mixed up two distinct species under one description. Taking, therefore, *S. ciliata* figured in the *Register* as the true one, and referring that of the *Botanical Magazine* to Lindley's *S. thysanodes*, I shall proceed with a brief description. The leaves are broadly obovate, slightly coriaceous at the base, perfectly glabrous on the surface, but margined with a dense array of somewhat bristly ciliae, accompanied by a conspicuous line of red colour; the flowers are whitish, not nearly as large as in the previous species, arranged in a lax branching panicle; the segments of the calyx are deeply divided and fringed with hairs. Our plant comes from the Mussoree range of hills, where it grows at an elevation somewhat lower than *S. ligulata*, hence the cultural remarks that I made will apply equally to this species as to that.

S. thysanodes of Lindley—in the *Botanical Register*—is undoubtedly the same plant as is figured in the *Botanical Magazine* as *ciliata*. It is of very dwarf habit; the leaves are broadly oval, supported on short thick fleshy petioles; they are covered with erect bristly hairs, both above and below; broadly crenate as to the margin, not cordate. The flowers are produced in small numbers on an almost simple inflorescence; the petals are of a creamy white colour tinted with crimson, short, expanded, and not unguiculate; the calyx segments are entire, not fringed; the scape is a beautiful bright crimson, as also is the tube of the calyx. This plant was sent home by Royle from the Mussoree Hills, and is a much more tender species than *ciliata*; but, at the same time, more attractive, and well worthy the protection of a frame, or even a cool greenhouse.

S. purpurascens of Drs. Hooker and Thomson is, perhaps, the very finest of the whole section. It lays claim to Sikkim as its native habitat; there, at an altitude of some 12,000 to 14,000 feet it revels in atmospheric purity high above the *Rhododendron* zone of the Himalayas. Its leaves are smaller than any of the preceding, broadly ovate, perfectly glabrous and shining, with a smooth margin,

neatly edged with red, the same colour being also conspicuous in the mid-rib. The scape rises to a height of 10 or 12 inches, is considerably branched, and sparsely covered with dark glandular hairs; the flowers are produced in pendent masses, both calyx and corolla being alike as to colour, which consists of an unusual combination of red and purple. Though our plant is by no means a rapid grower, yet it possesses a good vigorous constitution, and is perfectly hardy. Unless increased by seeds it will be some time before it becomes plentiful in the country; at least, I know that I have always claimers in advance by the half-dozen for any duplicate plants I am likely to possess.

S. Stracheyi of Hooker is a strong-growing plant, somewhat closely related to *cordifolia*. The leaves are nearly as broad as long, slightly undulate; the margins obscurely indented, and lined with very short hairs; its flowers are produced in broad branching panicles, of a light pinkish colour with a shade of lilac therein. I have not yet had an opportunity of testing its hardiness; but, as it comes from a considerable elevation on the Himalayas, I should think it would prove as hardy as the preceding species.

ROSE HEDGES IN THE SOUTH OF FRANCE.

ON our last excursion from Marseilles to Genoa, we were greatly struck, as any one seeing them for the first time would be, with the magnificence of the Roses all along the Mediterranean shores. The Rose hedges, and the espalier Roses, especially, offer an indescribably gorgeous sight. Under the genial influence of the warm sun of Provence, from the Corniche to the extremity of the Riviera di Ponente, that is as far as the Gulf of Genoa, and protected to the north by the mountains, which gradually slope down to the sea coast, Roses attain the size of Pæonies, and develop a depth and brilliancy of colour and a richness of fragrance of unusual intensity. But this is in part due to another cause, or rather two other causes, which lead to the same result, the main point being the choice of suitable subjects for stocks to graft upon. These stocks are, *Rosa Banksiæ* and *Rosa indica major*. The Banksian Rose presents three varieties, namely, White Banksian, producing a profusion of small white flowers, scarcely so large as those of the double-flowered Cherry, and of a most delicious fragrance; Yellow Banksian, with still larger clusters of small nankeen-yellow scentless flowers; Chinese Thorny Banksian, flowers less numerous and about three times as large as in the two preceding, and of the most grateful odour. These three forms attain an unsurpassable vigour in this region. In two years, one plant will cover an immense wall, the gable of a house, or climb to the top of a tall tree, from which its branches hang like flowery cascades, embalming the air around with a rich perfume during the months of April and May. Now, if these be taken for stocks upon which to bud some of the choicer Teas, Noisettes, and Bourbons, the growth of the latter will be prodigious. The stock should be two years old, having well ripened, though still smooth, wood. In this way such varieties as Gloire de Dijon, Maréchal Niel, Lamarque, Safrano, Chromatella, Aimée Vibert, le Pactole, and all the Teas, attain such dimensions as to be no longer recognisable. *Rosa indica major* is almost naturalised throughout the whole of this region. It possesses the additional claim to favour of flowering nearly all the winter, forming beautiful hedges of dark green shining foliage, from which thousands of clusters of lovely flowers rise, of a tender delicate transparent pink, or almost pure white, with a brighter tinge in the centre and at the tips of the petals. This Rose is an evergreen, and makes an excellent stock for grafting or budding. It is either planted in nursery beds, where it quickly throws up a stem suitable for standards in the same way as we employ the Dog Rose, or in hedges, and left to its naturally luxuriant growth to produce its own charming flowers in rich profusion, or rows of cuttings are put in where it is intended to leave them, and subsequently budded with some of the varieties of the diverse tribes we have named. We admire it most when treated in the manner last indicated. In the gardens of the Villa Lizerbe, Nice, the residence of M. Cazale, we saw three or four long hedges reared in this way; and, on the 6th of May, they presented a most gorgeous feast of flowers. To give only one instance, we plucked, at random, a flower of Gloire de Dijon, which measured 5½ inches in diameter, or 16½ inches in circumference. And it would not have been difficult to find even larger flowers. This is how the intelligent head gardener, M. Guichard, obtained such splendid results. The soil where the hedge was to be made having been moved to the depth of more than 3 feet, was planted towards the end of winter with cuttings of well-ripened wood of *Rosa indica major*, about 9 inches apart. They were left to grow as much as they would and not cut back at all. In August they were budded nearly close to the ground, and in the following year already they formed a hedge producing

flowers abundantly. Iron wire stretched upon slender Bamboo stakes is sufficient to support the branches. Pruning is only resorted to to keep them in shape, remove exhausted branches and shorten gross shoots. This Rose is also easily propagated by pegging down long branches or slightly covering them with earth, cutting them asunder at the joints when rooted, and thus obtaining as many plants as there are joints. By this very simple process M. Cazale has succeeded in raising his Rose hedges of incomparable beauty. From these hedges waggon loads of flowers might be cut every year. It is the varieties which flower in winter, amongst which Safrano is the very best, that are here propagated on a large scale. We particularly noted:—*Souvenir de la Malmaison*, *Chromatella*, *Gloire de Dijon*, *Général Jacqueminot*, *Maréchal Niel*, *Safrano*, and *Gloire des Rosamaes*. A large number of others grew and flowered equally as well as the foregoing. In conclusion, we recommend *R. indica* major as a stock wherever the winters are not very severe, and where earthing up or covering around the base is sufficient protection to secure the advantages of this vigorous growing species for this purpose.—*Illustration Horticole*.

Slugs v. Alpine Plants.—Being much annoyed by slugs, I at length determined to "fortify" my Alpine bed, and admit none but such as could "leap the ditch." This fortification I effected to my entire satisfaction by procuring a coil of zinc, which I cut into strips about 20 inches wide, and bent into U form, and buried as an edging round the bed, and kept it constantly nearly filled with water; and I found that neither slug nor snail ever crossed it, and it was very easy to banish all that happened to be enclosed. I connected this with a fish-pond, and it no doubt afforded the inhabitants a source of great pleasure, as they regularly made "excursions round the world," and seemed to benefit much by the liberty given them. In small pots standing in the water I planted several pretty plants, such as *Drosera*, *Pinguicula*, Mosses, &c., taking care that no bridges were formed; the effect was very pleasing. At several potteries they are now manufacturing pots and pans with double sides to hold water between them for the same purpose, and to keep up a constant supply of moisture.—T. MACGANN, in *Science Gossip*.

Destruction of Plants on Arthur's Seat.—Allow me to invite fellow naturalists to spare some of the rarer plants in Scotland by not absolutely clearing away everything in that way that comes before them. I will not enter on the subject of rare Alpine plants, for one must go to Clova or Ben Lawers to get at them; and now that other hills are being searched and new habitats are found, even if some of them get destroyed in some localities—as, for instance, on Ben Lomond—yet, it will be long before the plants themselves are wholly destroyed. As members of the Scottish Flora, something might also be said about the extinction of rare Ferns. But I put in a word simply for Arthur's Seat, where some plants, not uncommon in my early days, are now so rare, or confined to such neck-breaking parts, that one cannot find a specimen—say, of the Fork Fern (*Asplenium septentrionale*). Even the German Catchfly and lovely *Geranium sanguineum* are only here and there visible in inaccessible places.—NATURALIST.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pond Weeds.—Will some of your readers kindly say what is the best way to keep a pond free from weeds, and a kind of green submerged Moss which in time floats on the surface of the water? There are gold and other fish in the pond.—E. F. T., *Belfast*.

Linaria Cymbalaria.—One of your correspondents recommends planting this on rock-work. Here it penetrates everything, even greenhouse walls, from which it is impossible to eradicate it. In short, it is quite a nuisance.—ANNIE OWEN, *North Wales*.

Rainer's Bellflower (*Campanula Raineri*).—This is now flowering freely in the York Nurseries—so freely, indeed, that I counted upwards of fifty blossoms on one tuft. The flowers are about the size of *C. turbinate*, borne on stalks from 1 to 2 inches in height, and a shade lighter in colour than those of *turbinate*. It thrives best planted in sunny positions in lawn freely intermingled with pieces of stone, and well watered in dry weather.—R. F.

Climbing Roses.—I am anxious to cover a piece of wall above the end of a lean-to Vinery with Roses. The wall is exposed to the full force of the east wind, and the site is 500 feet above the sea. I should prefer dark Roses, and hardy quick growing kinds.—FLEUR DE LIS. [Try some of the *Boursalts*, such as *Gracilis* and *Amadis*, a purplish-crimson. *Inermis*, too, is a good bright red.—Ed.]

Autumnal Daffodils.—There are three or four species of *Narcissi* that bloom during the summer or autumn months about which I should like some definite information. *N. viridiflorus* is figured in the *Botanical Magazine*, t. 1, 687, and bears inconspicuous green flowers with reflexed segments; *N. serotinus* and *N. elegans* are two other species mentioned by Baker in his "Review," about which cultivators seem to know but little. Can any of your readers tell me if these plants are anywhere in cultivation, or refer me to good coloured figures of them? It is not improbable that they may exist in some old-fashioned gardens, but these old things are apt to be overlooked in favour of more showy border flowers.—F. H., *Edinburgh*.

THE ARBORETUM.

TREES AND SHADE.

How enjoyable the shady nooks of our gardens have been during the broiling days of July, 1874, need not be dwelt upon. Any tree-shaded recess during the hot months of summer becomes the favourite garden resort during the mid-day glare; even the attractions of the flowers failing to make us linger long about the open parterres while the sun is high and the heat oppressive. Yet we do not seem to take so much pains as our forefathers did in the creation of green alcoves and cool arbours facing the north, of which one hears so much in the descriptions of old gardens; nor in the careful providing of the shady "wilderness," which was the ever necessary appendage to every English mansion of the olden time, though scarcely ever thought of in the formation of modern gardens, in which all is required to be so trim and smart that the delightful old bit of wild Nature has had to submit to banishment, and, along with it, its subdued light, its cool shades, and all the charms of its natural wildness, in which Bramble and Bryony were allowed to intertangle themselves with Ivy, as an undergrowth, and a Moss-grown pathway or two, could not even remain unmolested. In Elizabeth's time, Shakespeare often alludes to shady garden bowers and Yew arbours as favourite retreats in summer days; and delights to dwell upon such features in the gardens of ancient times. In old gardens, the cropped Yew or Holly hedges of great height, green walls of verdure, made gloriously shady walks, impervious to a single ray of light. Between two such hedges, constant shade prevailed; and a fountain at one end added to the aspect of refreshing coolness. Nothing would be more easy than to plan and plant summer groves, and groups of shade-giving trees, in every new garden, large or small, according to the space at command; for there is no necessity to have recourse again to the cropped Yew hedges or Yew arbours of our forefathers, or to any other kind of topiarian work. The central fact to be borne in mind about shade-trees is, that some kinds are frequently planted which are useless for this purpose. Shade-trees are of more importance in the heated streets of a city and in promenades; yet, as we write (13th July), the Mall in St. James's Park is thickly strewn with the fallen brown leaves of the Lime, and the trees above are yellow with the foliage about to fall. It is absurd to plant a tree to furnish shade which frequently begins to lose its leaves before the heats of summer have set in. Besides, our summers are short enough in all conscience, without planting the Lime to give us signs of autumn long before it really appears. Curiously enough, it is from foreign trees that we get the most perfect and refreshing shade. A good shade-tree should not only give a dense cool shade, but its green should be fresh and pleasant to the eye in the heat of summer. Mr. Meston thinks there is no better tree for shade than the Black Italian Poplar; and it possesses these essential qualifications even in London, where the Lime fails so much sooner than it does in the country. Some of the *Acer platanoides*, and the *Sycamore* and its varieties, are strongly recommended by Messrs. Osborn, of Fulham, who also mention the Horse Chestnut; but town planters would do well to bear in mind that this loses its leaves in cities prematurely, and somewhat after the fashion of the Lime. The Ashes have fine qualities as shade-trees, retaining their handsome leaves throughout the heats. The Planes are very fine, but somewhat open; they also begin to show the yellow leaf too soon, but never in a very objectionable way. The Tulip tree, when old and spreading, is a good shade-tree. *Populus alba* and *P. a. acerifolia* are also valuable. Perhaps the most charming green hues are afforded by Robinia and its varieties, which, though somewhat late in coming into full leaf, retain their exquisite verdure till late in the year.

Many trees may be named, which, in open situations, may be readily trained to form of themselves isolated shady retreats, even on a sunny lawn. The Weeping Ash, for instance, in a good situation, will very quickly form a perfect tent of verdure, providing ample room within its descending branches for garden seats, and even a rustic table. The Weeping Mountain Elm, again, forms a fine far-spreading canopy of very dense foliage, which, though not descending perpendicularly to the ground, and so forming an absolute tent, like the Weep-



SHADE-GIVING TREES.

ing Ash, is perhaps more impervious to the sun-rays, and casts a broad and deep shadow, in which a certain amount of coolness may be constantly enjoyed. Then there is the Weeping Willow, never yet utilised in this way, which, by careful management, might be made to form garden apartments of very picturesque character; for instance, let four young trees, high standards, be planted at the angles of a square about 9 feet in diameter, let a slight framework be raised, over which the lateral branches are to be trained; and in three or four years, an interlaced roof of summer greenery of considerable expanse will be formed, and, then the new branches may be allowed to descend all round, forming a screen, or rather gracefully descending curtain, surrounding the entire space intended to be so enclosed. This result being achieved, the trees may be allowed to pursue their natural growth, and all appearance of formality will rapidly disappear, leaving to the pleasantly enclosed and shaded space the aspect of being merely a graceful accident of Nature, especially after the removal of the original supports to the roof of interlaced verdure, which may be done as soon as the branches have permanently assumed their positions and acquired sufficient strength to support themselves without extraneous aid. Many other shade-producing devices of more or less pleasing and appropriate garden character might be formed.

The following list of shade trees has been furnished us by Messrs. Osborn:—

Acer platanoides Pseudo-Platanus albo-variegatum purpureum Esculus Hippocastanum flore pleno chiocensis rubicunda Ailantus glandulosa Castanea vesca glabra Fagus sylvatica purpurea pendula Fraxinus excelsior pendula	Juglans nigra cinerea regia Liriodendron Tulipiferum Platanus acerifolia pyramidalis Populus alba acerifolia canescens pendula tremula pendula monilifera angulata candicans Quercus pedunculata sessiliflora Cerris rubra	Quercus coccinea palustris Robinia Pseudo-Acacia crispata macrophylla Decaisneana Salix pentandra babylonica Russelliana alba Sophora japonica Tilia europaea platyphylla intermedia rubra aurea alba pendula	Tilia americana laxiflora pubescens leptophylla heterophylla Ulmus campestris latifolia suberosa pendula montana major pendula var. (Camperdown Elm) glabra vegeta (the Huntingdon or Chichester Elm) americana
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H. N. H.

TREES STRUCK BY LIGHTNING.

At a late meeting of the Botanical Society of Edinburgh, Mr. McNab said that he had recently visited a large Sycamore, growing in the park at Woodburn, Dalkeith, which had been struck by lightning on the 25th June. The stem of the tree was 11 feet in circumference at 3 feet from the ground, and 70 feet in height, and of perfect symmetry. Considerable portions of the outer bark, varying from 2 to 3 feet in diameter, particularly on various parts of the upper branches, presented the appearance of having been scorched. Portions, from 1 to 6 inches in length, and averaging 2 inches in breadth, were more or less curled up, and seemed attached by the middle. On one spot alone had the bark been entirely removed, and in this instance the strip was about 2 feet long and 6 inches broad. Numerous lines were traced on the outer bark, as if carried off by the electric fluid as it was passing to the ground. It was difficult to say what permanent damage the tree had sustained, but towards the top of the south-west side it had a yellowish appearance. An Ash at Lugton, on the Dalkeith property, had been struck at the same time. This tree, which was about 8 feet in circumference and 50 in height, was struck one-third from the top. The bark had been entirely taken off, and the wood much splintered at the point where struck. At various places along the main stem the bark had been stripped off, and at the base the bark had been nearly all removed. Some Beech plants had at the same time been injured in the nursery grounds of Mr. Methven at Inverleith Park. On inspection he found a row of four-year old plants more or less damaged. The leaves had been burned, but otherwise the plants appeared in a healthy condition. Although in several cases he found that both the leaves and branches of Beech trees had been injured by lightning, there was not a case on record, as far as he was aware, of this tree having been torn to pieces like many others. Of late years many forest and ornamental trees had been damaged by lightning, and, although not instantly killed by the electric fluid, they were injured to such an extent as ultimately to cause death. Wall fruit trees were also

subject to the effects of lightning, and almost immediately a sudden browning of the leaves would be observed. In the case of stone fruit, besides this colouring of the leaves, the bark burst, causing a flow of gum from the injured portions. Sir Walter Elliot made a few remarks on trees which had been struck at Sidlaw last year, and, which up till now were not observed to be damaged. The President gave a short description of a large Oak which a few years ago was struck by lightning at Edmonstone House. This instance, he said, gave one an idea of the amazing power of lightning. The trunk on being struck was shattered to pieces, and, in proof of that, he had to state that large pieces, 9 and 10 feet long, were blown some distance off.

Singular Case of Branch-falling.—We have here a few of the best English Elms I have ever met with, one of which covers a space 79 yards in circumference, and has a height in proportion. The first branches are quite 30 feet from the ground; indeed, I do not remember ever seeing such a height and spread of branches combined. The trunk girths, at 4 feet from the ground, 13 feet 3 inches, and is, as the saying goes, "as sound as a bell," as are even the smallest branches. What storms this fine tree must have battled through, and yet not a limb has been lost. One, however, fell when least expected, not in a storm, but in one of the calmest nights of summer, during a heavy dew or fog. The branch which thus fell is 14 yards long, and measures 4 feet 10 inches in circumference. It is without split or other blemish, and I am at a loss to account for its snapping off otherwise than by the weight caused by the deposit of dew; or, possibly, the long drought has had something to do with the matter, the wood having become crisp through want of moisture. The occurrence took place on the night of July 9.—JOHN TAYLOR, *Hardwick Grange, Shrewsbury.*

New Weeping False Acacia (Robinia Pseudo-Acacia pendula).—To the above name we might, after the manner of many horticulturists, add the qualifying word *vera*, to distinguish the plant of which we are speaking from that which has long been sold for it, under the popular name of the Weeping Robinia, which has nothing weeping about it but the name. In fact, this last-named plant is a variety of *R. tortuosa*, of a somewhat vigorous growth, the longer branches of which bend down slightly in consequence of their length. The plant bearing the name, at the head of these remarks, is, on the contrary, of a distinctly weeping growth. The vigorous branches, which are often of great length, weep down towards the main trunk, after the manner of the *Slyphnolobium pendulum*. The foliage presents no special peculiarity, and resembles that of the typical species, or common Robinia. Where have we the plant we are noticing? We have admired it at St. Michel-Bougeval, in the garden of M. Couturier, the eminent nurseryman, of whom plants may be procured. We believe that it has even flowered, though we do not affirm the fact.—*Revue Horticole.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Olives out-of-doors at Clapham.—Mr. Hanbury exhibited at a recent meeting of the Linnean Society branches of Olive grown in the open air against a wall at Clapham, some bearing flowers, others nearly ripe fruit.

Raising Ground round Oak Trees.—Most certainly raising the ground over the roots of Oak trees (see p. 524, Vol. V.) will gradually kill them. Healthy Elms often bear covering over in that way with impunity; but my experience is that such covering is highly detrimental, and generally fatal, to Oaks. Build a rubble wall round the stem, 8 or 10 feet from it; this will help to extend the period of existence, but will not ultimately save the trees.—M.

True and False Retinosporas.—Retinosporas come mostly from Japan; but one or two of them, or what pass for such, are known to have originated from seed of the American *Arborvitæ*. M. Carrière, in the *Revue Horticole*, after a long study of them, comes to the conclusion that all the species of Retinospora fall into two series, and have been derived—one set from the American *Arborvitæ*; the other from the Chinese or Japanese *Arborvitæ* (*Biota orientalis*).

Cercis Siliquastrum in the Botanic Gardens at Leyden.—While visiting these gardens in the beginning of May, I was delighted with the beauty of this tree, of which there are in these gardens three grand specimens, one against a west wall, and two others against a south one. The circumference of the stem of one of these, at 6 feet from the ground, is about a foot, and it reaches to the top of the wall, which is from 15 to 19 feet in height; at the top, the branches extend horizontally to the length of 45 or 48 feet. During my visit, these trees were covered with flowers of a bright rosy-pink colour, produced in bunches from the old wood before the foliage makes its appearance. This gives the trees a singular but beautiful appearance.—A. M. C. JONGKINDT CONINCK, *Tottenham Nurseries, Delemmevaart, near Zoelle, Netherlands.*

Oak Trees in Chemical Manufacturing Districts.—The Oak is possessed of more vitality than most people are aware of. Living in the heart of the chemical manufacturing district of Lancashire, I have had an opportunity of observing the behaviour of this tree under difficulties. It is quite true that it is the first to show signs of decay, and that it yields to the influence of the noxious gases before any other British tree; but, after it has apparently withered, and to all outward appearance is dead, it continually, year after year, sends out again a few green shoots, thus showing that the roots are living, and to some extent vigorous. Other trees in this district which are susceptible to the gases, seldom send out any new shoots. Another thing worthy of notice is that tall trees suffer before shrubs or small trees.—R.

THE FRUIT GARDEN.

THREE CROPS OF MELONS FROM THE SAME PLANTS.

I HAVE hitherto been under the impression that one crop of Melons from each plant was all that could be got in anything like perfection in any one year; but this season we have gathered one crop, part of a second, and even a third crop is set and swelling. The plants from which so much fruit is obtained are grown in a close frame, heated by means of a 3-inch pipe run all round it for top-heat, and a similar amount of pipes for bottom-heat. Over the pipes for bottom-heat a vacant space is left, formed by placing boards 4 inches apart across the pipes, their ends being laid on bricks in such a manner as to raise them several inches above the pipes. Thin turves, with the green side down, are placed on the boards, which leaves a space 3 feet deep in front and $4\frac{1}{2}$ feet deep at the back. Into this space Oak leaves are then firmly trodden, leaving a foot clear between them and the glass. Below the centre of each light is placed a barrowful of good yellow loam mixed with a quantity of dry cow dung—materials which form a good compost in which to plant; and, as the roots extend, more of it is added from time to time until the bed is covered. When the plants have made six leaves they are pinched in, and as the laterals extend they are pegged down on the soil at regular distances apart; and, on reaching the extremities of the pit, their points are stopped, which terminates all further stopping until the first crop is ripe, unless any stray shoot happens to rise against the glass. When a fruit has fairly set and has commenced swelling, a brick or slate should be put below it to obviate discoloration by laying on the soil, and also to facilitate ripening. All laterals bearing fruit are stopped two buds beyond the fruit. When the first fruits have attained half their size another crop will be setting, which should be treated like the first, and when the first fruits are cut, a third crop will be setting. All barren and superfluous shoots should now be removed, as well as all decaying leaves. Watering is a matter of much importance. When the plants are put in, a good soaking should be given them, and no more will be required until the shoots have reached the sides of the frame, after which another good watering will be sufficient to set the first crop. After they have set and have begun to swell, they will require water regularly every week. To the plants under each light, I give once a week, four large potfuls of manure-water and two of clear water. The manure is given through the spout of the pot, and as little is spilt on the leaves as possible. The clear water is applied through a rose, and it washes any of the leaves that may have been touched with the manure-water. When the fruits begin to colour, watering is withheld until they are cut, after which, watering is carried on as usual, and between three and four in the afternoon is the best time for the operation. Syringing must be attended to night and morning, viz., in the afternoon when the temperature is about 100° , and first thing in the morning, unless the latter is so dull and cold as to render it inexpedient to lift the sashes.

JAMES MORRISON.

Fig Trees Casting their Fruit.—A friend of mine is in distress at the conduct of a fine Fig tree, which, after making a great show of fruit that promised to become very fine, suddenly commenced to drop its Figs, until, in a few week's time there were very few remaining on it. It is stated to have been well watered, and to all appearances healthy. Can you, in the absence of further knowledge of the circumstances, give a clue to the cause of the disaster, and its remedy.—R. CURTIS. [Upon submitting this case to an excellent Fig grower, he has kindly favoured us with the following reply:—The cold spring, and June frosts have killed the flowers, which are inside the receptacle, and which, after fertilisation, swell into the fruit. One of our own trees has suffered in the same manner. Even in more favoured climes, as in Judæa, the same thing sometimes happens, and "the Fig tree casts its untimely fruit." That this is the correct explanation seems confirmed by the fact that the second crop of Figs, which appears when the summer is advanced, is not liable to drop, at least from trees that are healthy, and good bearing sorts. If your friend's tree is of the Brunswick variety, which is known by its large, handsome, and deeply divided leaves, it had

better be discarded, and a Brown Turkey, which is a first rate bearer put in its place, after renewing the soil.—G. S.]

Packing Grapes.—Nothing is better for this purpose than tin boxes, 18 inches or 2 feet long, 6 inches deep, and 12 inches wide; these sizes will be found to fit suitable-sized hampers. Packing materials should consist of fine paper-shavings or coarse unbleached cotton-wadding. It is not contact so much as rubbing which destroys the bloom of the berries; the bunches should therefore be packed very firmly, first wrapping each bunch in one or two sheets of soft tissue or fine drapery paper, and afterwards wedging them together in the box, so that when the lid is shut down they cannot move about, in whatever position the box or hamper may be laid or thrown. Grapes packed in this way rarely get damaged, nor is the bloom of the berries much affected.—*Gardener.*

Gooseberry Bushes for Garden Fences.—Why not? and also for hedges between arable fields on farms? There can be no question that a Thorn hedge forms a good fence, but it is no more than a fence; it needs good land and free exposure to light and air to grow it, and a great deal of labour to keep it in order, but it yields no profit. Perhaps nothing could be better for external fences or for boundary lines between meadows, where a strong fence is needed to prevent the passage of stock; but in such positions as those indicated above, an impenetrable barrier is of less moment. A certain amount of shelter, and a clear sharp line of division are all that is necessary, and these may readily be found in Gooseberry plants of various sorts. In fact, many varieties, such as the Iron-monger, Warrington, &c., with their long sharp spines, would make a fence almost as impenetrable as a Quickset itself; and almost any sort of Gooseberry has spines enough to constitute it a good hedge plant. Of course a great deal depends upon the modes of planting and training. It would not, however, be difficult by a little manipulation to make a fence of Gooseberry bushes quite as impenetrable as most of those formed of White Thorn; but with even ordinary attention, they would form a fence sufficient for the positions thus indicated. Supposing them only to be used as dividing lines between gardens, what an immense gain to cottagers and small holders would result from it. Why, many persons might gather almost enough Gooseberries, green and ripe, to pay their rent, and would still have plenty left for their own consumption. Once make fences of them between fields, and there would hardly be any limit to the quantity of this wholesome fruit. For this purpose, the plants should be planted a foot apart, and pruned into a sharp-pointed pyramid, say 2 or 3 feet wide at the bottom, and to a point at the top, the height ranging from 3 to 5 feet, according to circumstances. Lines of this sort would not grow fruit of an ounce weight, but they would grow any quantity of useful fruit of medium size and of fine quality. It is to be hoped that many persons may decide to stub up their old Thorn hedges, and substitute Gosseberries.—*Florist.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

How to Induce Side Branches in Apple Trees.—I have a young Apple tree, about 8 feet high, trained against a wall, the main stem of which is devoid of side branches for about 3 feet in the middle of the tree. What course should I take to induce the tree to push out side branches? Shall I have to cut back the leading branch?—C. [Make an open incision by means of two cuts above the dormant eyes, or graft or inarch shoots in the vacant places.]

How to cut Pine Apples.—When Pines are cut, as many of the short leaves that are found on the fruit stem, close to the bottom of the fruit as possible, should be cut with them. The natural garnishing which these small leaves afford the fruit when set on the dessert table is very effective. I have seen many forms of artificial garnishing tried, but none to surpass this. The want of these leaves on imported Pines very much impairs their appearance. When packing Pines to travel, these leaves should be carefully raised and tied up around the fruit with a bit of soft matting. In that way they help to protect the fruit.—J. MEIR.

The Grape Crop in California.—From the reports to local papers, the Grape crop of 1874 promises to be both heavy and of good quality. In Napa county the yield is estimated to reach probably 4,025 tons, or 637,000 gallons of wine. Sonoma county is estimated to yield from 10 to 25 per cent. more than last year. Other counties make similar reports. In Santa Clara, making raisins is a profitable business. Only about 75 per cent. of the Grapes in a Vineyard are suitable for raisins, and these shrink 33 per cent. in drying. A good Vineyard should therefore yield half as many pounds of raisins as there are Grapes harvested. California is for Vine growing the finest State in the Union, our hothouse Grapes thriving well there, whereas in the east they are a failure.

The Washington Pear.—We have cultivated and fruited this Pear and highly commended it for more than thirty years, the first specimens appearing in the year 1836. We observe by the public journals that cultivators in many places are just awaking to an appreciation of its excellence. The tree is a handsome, although not rampant, grower, and is one of the earliest bearers, being excelled in this respect only by the Julienne and Butlett. When well grown, the Pear is handsome in appearance, the crimson dots on the side next the sun adding much to its beauty. In flavour it is very sweet and excellent. Its drawbacks are—it is not large enough in size to obtain celebrity in market, and although very juicy and tender, it is rather breaking than buttery and melting in texture. It is one of the varieties that will flourish on almost any soil.—*Cultivator.*

THE GARDEN IN THE HOUSE.

ARTIFICIAL LIGHTING OF DINING-ROOMS.

[Miss HASSARD, so well known for her charming dinner-table and other floral decorations at our great flower shows, and who has so often contributed to *THE GARDEN* articles embodying her experiences in that way, has, we are glad to say,

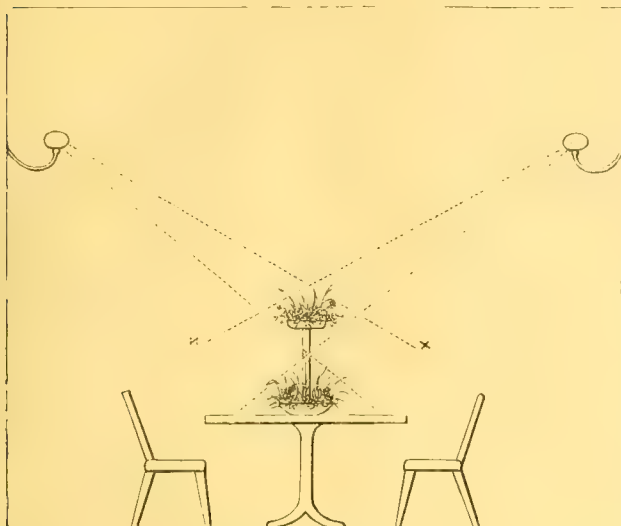


Table with gaslight at each end.

acceded to our request that she would re-describe them in consecutive order. In the articles, of which this is the first, the whole question of table decorations will, therefore, be dealt with in detail.—Ed.]

The selection of stands for the decoration of the dinner-table must depend (as has been well shown by Mr. W. Thomson, in *THE GARDEN*, whose illustrations we reproduce)

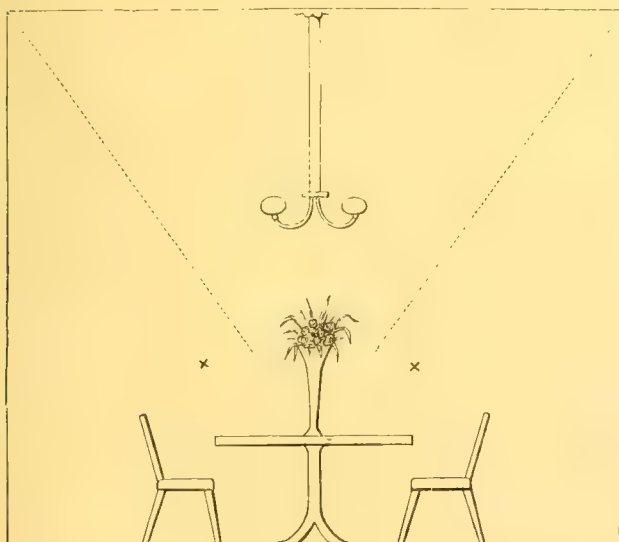


Table with gaslight over centre.

on the manner in which the room is illuminated by means of artificial light. Generally speaking, there are but three ways of lighting rooms with gas or wax lights, viz., lights placed on the table, bracket or wall lights, and the chandelier or gasalier. The style of stand or stands selected for the table wholly depends upon which of these modes of lighting is adopted. For instance, if the room be lighted by two gas lights or chandeliers, one at each end of the table, a

March stand should be chosen; but if illuminated by a gasalier placed over the centre of the table, the selection of such a stand would be a mistake, for, the light being above the stand, though the flowers arranged in the top tazza would be well shown up, those in the lower one would be put into the shade; the top tazza would catch all the illuminating rays, and keep them off the lower one as effectively as if a screen had been placed over it. By such an arrangement as that shown in the accompanying illustration, each tier has its proper share of light. Where the gasalier is placed over the table, the best form to use is a high single slender trumpet, or some such shape, so that when the light happens to fall on it, it will not throw any shadow on the arrangement which may be placed round the base of the vase. When the light is placed over the centre, flat arrangements can be used with advantage, though for my own part, where possible, I give preference to something high in the centre. Undoubtedly the best stand for a room thus lighted is the trumpet, or some modification of it—such a stand, in short, as that represented by the accompanying illustration. When about to purchase new stands, these remarks should be borne in mind, and also when arranging pot plants on the dinner-table; for the mode of lighting affects them quite as much as stands. If the lighting is not taken into consideration, large Fern fronds and similar foliage would throw heavy shadows on the table-cloth, which would spoil the look of any arrangement in their vicinity.

Plants Placed Through Dinner-tables.

Many will doubtless be ready to exclaim, "Who would cut holes in one's dinner-table or table-cloth for such a purpose?" Well, allow me to explain how this can be effected without damaging either the table or cloth. With the exception of those who have seen suitable plants put through a table, no



Pot plant through table.

one can have an idea of the elegant effect which they produce when arranged in that way. Imagine the striking effect which young Tree Ferns or Palms have in such positions; their elevated fronds shading from the blaze and glare of light the smaller arrangements of flowers and fruits laid here and there on the snowy damask below them, a result which cannot be produced unless the plants are put through the table. This may be done in several ways. Dinner-tables are generally of two kinds—the one the telescope, into which may be put as many or as few spare leaves as may be desirable; the



Plant through table arranged with Ferns, &c.

other that with a large centre and spare ends, which may be added at pleasure. There are two ways of putting the plants through these tables. Now-a-days dinner-tables are never, I need hardly say, uncovered, therefore it is of no consequence of what material the top of the table is made, provided one leaf, reserved for a plant in the centre, or two if for a plant at either end, be made of common deal, either the same size as the mahogany one for which it is substituted, or only a foot or 18 inches wide, if the table is required to be made shorter.

This spare leaf should be cut in two, and a half-circular piece cut out of each piece, which, when replaced in the table, will leave a circular hole in the centre. Before this deal leaf is lifted into the space from which the mahogany one has been removed, a wooden box, or anything which will form a stand for the plant, should be put into proper position; the plant should then be placed on it and carefully raised to a proper height, keeping always the surface of the pots just below the level of the table. Each half of the spare leaf may then be fitted into its place, when the stem of the plant will occupy the centre of the circular hole cut for it. If there is a plant to be placed at each end of the table, the best way of supporting them is to place a long plank underneath. Should Ferns be used, the holes cut out of the spare leaves must be of the same size as the top of the pots, as, in the case of such plants, the pots must be flush with the table. The other plan of arranging plants in this way is to have a small piece of brass or iron that may be drawn across and fastened when the table is within an inch or an inch and a half of closing, which will prevent its either closing or opening. This form is suitable only for Palms, and similar plants. It is in this way the table with extra ends must be managed, and about which there is no difficulty; for I constantly practice it. Let us now turn to the covering of the table. The way the table-cloths (for it takes two to each table when so decorated) are arranged, is as follows:—Each cloth is opened and spread along each side of the table, so as to meet in the centre or lap over each other about an inch. They should be kept as flat round the base of the plants as possible, and the cloths should be pinned together so as to prevent them from being open. A clean flat-iron should next be obtained with which the folds should be neatly pressed, so as to obliterate any appearance of a join. If half the width of the cloth is not found enough to allow it to droop gracefully at each side allow more; but always keep the middle fold flatly pressed, a trouble which will be well repaid by the effect produced. My tables both at South Kensington and Birmingham had plants put through them. At the former I had a graceful pair of *Pteris tremula*, and at the latter a pair of *Chamædoreas*. The accompanying illustration represents a plant of white *Bouvardia*, with Ferns and scarlet *Pelargoniums* arranged round the base. All plants put through tables should have some similar kind of arrangement round the base, otherwise they would look unfinished, and, indeed, anything but ornamental.

Incense.—At a meeting of the Society of Experimental Therapeutics, in France, an interesting paper was read by M. L. Marchand, on "The Origin and Uses of Incense." In regard to its origin, M. Marchand states that it has been known from the period of highest antiquity under the name *Oliban*, and has always been regarded as a precious substance. It was burnt in the temples of pagan divinities, and to the present day it is used in Catholic countries, under the name of incense, from the Latin word *incendere*, to burn. There is much discussion as to the source of incense. Some authors think that all the incense which arrives in Europe comes from Arabia; but it is certain that whilst much comes from Arabia, some also proceeds directly from the trees of Abyssinia. According to M. Schimper, the resin is produced by a tree named *Boswellia floribunda*; others, with Flückiger, suppose that it is the *Boswellia sacra*; whilst others again, with Birdwood, attribute it to the *Boswellia Carteri*. M. Marchand distinguishes two species of officinal incense: one in small leaves mixed with more or less *débris* of bark; the other in large fragments of finer quality. The former was called male, the latter female, incense, by the ancients. Female incense is the produce of the *Boswellia papyrifera*, a plant that is only found in Africa. Male incense, on the other hand, is obtained both from India and Africa, being the produce of the Indian species, *Boswellia thurifera* or *serrata*, and the African species, *Boswellia sacra*, *B. Carteri*, *B. Bhau-Djama*-Mohr, and *B. Frerania-Vegaor*.

The Dismal Squares of London.—*Punch*, after commenting on the renovation of Leicester Square, says:—

Who follows suit? *Punch* wants to know—
Lifts thy square (once King's Place), Soho,
From squalor sad to think on—
Regards the square still "golden" bright,
And sets the lamps of legal light
High in the fields of Lincoln?

THE KITCHEN GARDEN.

SEAKALE CULTURE IN THE MARKET GARDENS OF LONDON.

SEAKALE is one of the most important crops grown by the London market gardener. It is either an annual or biennial crop, easy to cultivate, accommodating in its habit, free from insect pests; and, altogether, it gives little trouble and is highly remunerative. Growers in the Fulham fields, the Chiswick and Barnes Thames level, the Deptford and Woolwich neighbourhoods, and, in fact, for many miles round the metropolis, pay much attention to its growth, and regard it as one of their principal crops. From the first week in November till the end of April it is abundantly supplied in our markets.

Propagation.

The common way of increasing Seakale is from cuttings of the thong-like white fleshy roots, which are cut away from the crowns when these are lifted for forcing. These thongs, when removed, are thrown into a heap in a shed, there to remain until all the plantations that are to be lifted for forcing are up and dressed. The best are then selected, cut up into pieces about 4 inches in length, and laid in a heap by themselves. The remainder are either burned, along with prunings of trees and bushes; committed to the dunghill, where there is a herd of pigs, and where they are not likely to be disturbed until they are so decomposed as to be exhausted of all future efforts at new life; or, most commonly of all, carted away to some useless corner, where they are built into a heap, there to remain and rot throughout the succeeding summer. Beds are in the meantime prepared for the cuttings, from 4 to 6 feet in width, any length, and raised, like a seed-bed, about 4 or 6 inches higher than the surrounding level, to keep the Seakale roots healthy and free from damp. The cuttings are then brought hither, and a layer of them, nearly 2 inches in thickness, placed on the surface, and over them another layer of soil about 2 or 3 inches in depth. This being generally done in January, all is left undisturbed till planting time, which is commonly in March. The beds are then uncovered to unearth the roots, which will have started several eyes, and emitted a quantity of white feather-like rootlets. As now the top and bottom ends of the sets or cuttings can easily be discerned, men and women are set to work at them to rub off all eyes excepting the strongest top one, and to arrange them by placing all the head ends one way and the bottom ones the other way, and in this manner placing them in baskets for the convenience of the planters, who dibble them into the ground head end upwards. Instead of placing the made cuttings on the bed used for starting them, some growers lay thereon selected, but uncut, roots, and at uncovering time they cut back these roots to the best eye, then cut them at the required length below it, and rub off all other eyes, as in the previous case. By this plan good eyes are neatly and certainly secured; but the practice is more laborious than in the first case. Seakale, too, is raised from seed in some cases; but it is considered a tedious and almost needless way, considering how easily they are obtained from cuttings; and I think I can do no better than relate how Mr. Myatt, the famous market gardener at Deptford, propagates this vegetable from seed. In March he selects a piece of ground in some corner of his garden, digs it deeply or trenches it, but gives it no manure, if it had been liberally treated in that respect for the previous crop, and thereon he forms a series of 4 feet wide beds, with 1 foot alleys between them. On these beds he sows his seeds quite thickly. When the seedlings appear they are left unthinned and unmoved during the succeeding summer and winter, with no care being paid to them whatever beyond cleaning, which is attended to to prevent the weeds from seeding, thus preserving the soil from a succession of these pests. Early in the following spring, or when the plants are twelve months old from the time of sowing, they are lifted, cut into 4 inch lengths, to which are preserved the crowns, the remainder being thrown away. These pieces are then planted permanently at once, and will be equally strong with the plants from root cuttings. The objection to seedlings, however, is that they solely occupy

the ground under the seed beds for one entire year, without yielding any return that season, and also that during the second summer they are sometimes liable to produce multitudinous crowns; and, unless extra labour is expended in reducing them, they form but weakly subjects for next winter's forcing. By lifting them in January instead of March, cutting them back as before directed, and placing them in layers on beds, as already advised for root cuttings, all starting eyes, excepting the main single crown, could be rubbed away, and thus much labour saved. Why are not the seedlings thinned and planted out the first season of their existence? may be a question asked by many, and it is one that Mr. Myatt's experience soon settles. He has tried that mode of treatment, and, even with great care, found the majority of his plants "bolted" during the summer, and at lifting time the roots were too weak for any payable purpose; consequently they require another year's growing, and unremitting attention in reducing their many crowns; therefore he has discarded the practice, as being a troublesome and unprofitable one.

Planting and Summer Treatment of Young Plantations.

The Seakale cuttings being prepared and in readiness for planting, that operation is usually performed in March. No ground is prepared for them alone, but they are inserted with iron-shod dibbers at certain distances amongst the crop at the time occupying the ground. As a rule, the most approved method of cropping the Seakale ground at planting time is this:—The ground, after being well manured and doubly dug or trenched in winter, is levelled in February, and lines drawn along it $2\frac{1}{2}$ or 3 feet apart for Cauliflowers, which are then planted, keeping them at the same distance asunder in the rows, or more generally at that of the least distance. Between the lines of Cauliflower, other lines are drawn precisely in the middle—but this line is more commonly guessed at than measured—and in it are planted white or green Paris Cos Lettuces, only half the distance asunder in the rows as the Cauliflowers. In the rows occupied by the latter, too, Lettuce plants are inserted alternately with the Cauliflowers. Thus in the field there will be, when finished, three Lettuces for every single Cauliflower. The ground is now ready for receiving the Seakale, a set of which is planted with the dibber, alternately with Lettuces and Cauliflowers, in all the rows. The Lettuces are first ready for market, and are commonly removed before they can injure the Cauliflowers. By the end of May, most of the latter crop is also marketed, thus leaving the Seakale, which, by this time, will be coming up strongly, in sole possession of the soil. Mr. Broadbent, of Parson's Green, Fulham, an excellent gardener, plants his Seakale sets 15 by 18 inches apart amongst his spring Cabbages, which are all removed before they can materially injure the Seakale. Mr. Dancer, nurseryman and market gardener, Fulham, plants some of his sets in the alleys between his Asparagus ridges; but in this case they must all be lifted at the end of the first season. Mr. Geo. Steel plants some of his sets in rows between his Gooseberry bushes and Moss Roses; but they must always be removed for forcing at the end of the first season. Some nurserymen plant their sets at 18 inches apart each way, and never inter-crop the ground amongst them, but take great care of them; and, under such management, they get finer roots than can be produced in the market gardens. These nurserymen's roots being all lifted next winter, the best are sold for forcing, and the weakest cut back and sold as planting plants. It is a stupid practice, however, to buy plants for transplanting, for sets are decidedly better. The plants give trouble in reducing the number of their crowns and flower-stems in summer; whereas the sets, if properly made and treated, give hardly any, and in one year make almost as good crowns as the real plants will. In any case no further care is necessary throughout the summer and autumn than at first hoeing the surface soil weekly, whether it is dirty or not, cutting away all flower-spikes, as they only tend to weaken the crowns, and rubbing off all small shoots that may chance to spring around the main one; but this is an infrequent occurrence in the case of properly-prepared young plants. All vacancies in the plantation caused by blind sets, or others inadvertently hoed off or irreparably bruised in planting, should be made up with Lettuces. Towards the end of the

year, if the plantation is to be entirely lifted for forcing—say about the last week in October or the first fortnight of November—just as soon as the leaves have decayed, they are raked off into heaps with a wooden-toothed rake and carted to the manure-heaps. Sometimes they are left as a partial protection against frost.

Winter, Spring, and Summer Management of Old Plantations.

Although young Seakale are the most suitable and convenient for forcing, still there must be a portion, if not an entire plantation, left for producing "natural" Seakale, *i.e.* the Kale unforced. In private gardens this is commonly done by covering the crowns with pots made for the purpose, or a framework of wood covered with a mulching of leaves to exclude light; indeed, in the same way, but with increased covering of leaves or litter, the bulk of the Seakale is forced. The object of this old-fashioned and really troublesome plan is to save the forced plants for another year's use, thus incurring a watchful attendance during the succeeding summer in cutting out the flower-stems and reducing the shoots; otherwise, if left to grow as they can, they will produce multitudinous weak crowns, that will bear as many, if not more, weakly ones next year. If a young plantation be made every year, part of it to be lifted for forcing, and part left for spring use, to be grown on next summer, and lifted for forcing in winter, less time, ground, and trouble are required than by adopting the old principle of keeping the same plantations untouched year after year. In the end of autumn or beginning of winter, all roots to be forced may also be lifted, and lined in as closely as they can be put in some cool corner out of doors, to be taken into the Mushroom-house as required, and thus the piece of ground they occupied is empty and ready for manuring, trenching, and ridging, and in good condition for early cropping in spring. In market gardens all plantations are made as recorded under the preceding heading; and if the field is to be kept to yield "natural" Kale, every third row is lifted, and thus the rows are left in pairs, having a space of nearly, if not quite, 3 feet between them. The surface of the soil is then raked clean, and from this wide space the rows are earthed over to the depth of half a dozen inches, any time between November and February, but the sooner the better, so as not to interfere with the other work, and also to prevent the frost penetrating the ground amongst the crowns and thus rendering it cold and late. The Kale begins to push about the second week in March, and, according to the position of the field, and nature of the soil and weather, a supply may be gleaned therefrom till the end of April. As soon as the point of a shoot of Kale is discerned above the ridge, that head is fit for cutting, which is usually done twice or three times a week. In cutting, the soil is drawn away with a spade from every visible shoot, which is cut over just into the crown, and laid on the ridge top till all have been cut; or women with baskets come after the men and take them to the outside at once. The earth is not replaced again, except so much as is necessary to keep the ridges from breaking down, and thus leaving uncut crowns uncovered. When the day's cutting is over, the Kale is placed on its ends in broad shallow baskets, carried by men and women, or carted home, where it is washed, tied in punnets of a dozen heads, again packed into baskets, which are piled on waggons and sent to market. After all Kale is cut, the ridges are levelled down, and the space between the rows cropped with white Cos Lettuces, which heart at this season better than any other sort. Immediately the Seakale begins to grow numerous crowns are produced; but these are all reduced to two, or at most three, of the strongest, and in this respect, in removing their flower-spikes, and in keeping the soil about them loose and clean, they are well attended to afterwards. These old roots are used next winter for forcing, but I have known them, as in the case of Mr. Bagley, Turnham Green, to be kept for two or three years, but they gave continuous trouble throughout the summer, however, and the older they became the more annoying they were.

Forcing.

Never have I seen Seakale forced in the ground as it grows in any market garden, for such a practice would be far from

remunerative; indeed, all the Kale that could thus be forced would not pay for the trouble taken with it. In market gardens the roots are all lifted and dressed for forcing, cutting away the thongs to within an inch or two of the main root, as explained under the head of "propagation." If the Kale be required early, say in the first fortnight of November, the very best crowns and such as are best ripened, which will be seen by the leaves being withered the earliest, should be selected, as it is a difficult matter to get Seakale to start so early, notwithstanding its being the easiest of all vegetables to force. Having the crowns in readiness, a hot-bed is prepared for starting them in, which, in the case of the earliest batch, merely consists of a dung-bed covered with frames and sashes, and a few inches deep of soil levelled within the frames for planting the roots amongst, and that is done as thickly as they can be conveniently stowed together. It is endeavoured to keep up a heat of 65° or 70°, as they require a little extra excitement to influence them thus early. Litter or mats are kept on the surface over the glass, so as to keep all dark and blanch the Kale. Mr. Humphreys and Mr. Steel endeavour always to have a good cutting of Seakale in time for Lord Mayor's Day in London; but, as a rule, this is considered too early for regular forcing. When the time comes—about the first fortnight in November—the beds where Cucumbers were grown during the previous summer are cleared out, and re-filled with hot dung, over which about 8 inches deep of soil is placed and levelled, but no frames are used for the Seakale. A notch is then made crosswise in the beds, and therein the crowns are planted as thickly as possible, earthing them up to the top, which is left bare, and proceeding in this way till the whole bed is finished. The lines across the bed are about 5 inches apart, and about the same space of a margin is left empty on each side. Amongst the roots, and lengthwise in the beds, four rows of short stakes are inserted, so that they may be 18 inches above the soil. Some 6 or 7 inches deep of short litter is then strewed over the whole surface of the beds, which are then covered over with mats supported on the ends of the stakes.

When these stakes are not used hoops and mats are employed for the purpose. In about three or four weeks after the beds are made up cutting generally begins, when it is necessary to uncover the beds as the operation proceeds, drawing the short litter off the crowns to get at them, and replacing it as speedily as possible, as all the crowns are not fit to cut at the same time. For cutting the forced Seakale a small tool with a handle about 1½ feet long, bent at the neck, and with a blade about 2 inches wide by 3 inches long, like that of a spade or Dutch hoe, is used. This is a handy instrument, and well adapted for its purpose, as it may be so deftly employed for cutting over the Kale with a small piece of the root-stock adhering to it. The mode just described of forcing this vegetable is only that practised as regards the earliest beds; and, indeed, many growers do not adopt it at all, whereas all market gardeners that make Seakale forcing a part of their business form their beds, particularly the late ones, as follows:—A well-sheltered plot, near home and the manure-heap, is selected and lined off into spaces either 4 or 5 feet wide, with intervals 2 feet wide between them. These spaces are used as beds, over which the soil from the alleys or intervals is placed, after finely breaking it, until the alley is 20 inches deep. The Seakale crowns are then all lined into these beds as described in the case of earlier beds, and thus the beds are left uncovered until they are required for forcing; but, as a rule, two or more of them are always being forced, and others started to succeed them. As these beds have no bottom-heat, it is not necessary that they must be immediately covered, as in that case they, being incited at the bottom, would grow, no matter whether their crowns are cared for or not; but, in this instance, having no exciting agent, and being in a dormant state, they await the cultivator's convenience. In forcing them, the alleys between the beds are firmly filled with fermenting manure, and the beds being covered as formerly directed with short litter and mats supported on the upright stakes, all is finished. The Kale takes a longer time to push into growth by this means than when forced on a dung bed, and it does not come quite so regularly. This method, however, has the advantage of less trouble and risk, and great convenience in keeping up

a supply until it can be produced from the open-air beds, at which time all forcing should desist, and the forced roots should be forked out and removed to a heap by themselves, or to the piggery, where their vitality is sure to be destroyed—otherwise, if mixed amongst the dung, conveyed to a field at once, and dug into it, they would certainly grow again, and prove a future annoyance. The dung being forked out from between the alleys, the soil is levelled, and the piece of ground will then be ready for digging over for French Beans, Cauliflowers, Tomatoes, or for erecting Cucumber frames on. Mr. Gilbert, of Burghley, has a good method of heating Asparagus beds, which appears very feasible to me as regards Seakale beds, and I have recommended it to several market growers, who have promised to give it a trial. This plan is to get 2-inch drain-tiles, which he inserts at short intervals into the sides of the beds, so as to admit the heat from the fermenting material in the alleys to the interior, and thus increase the temperature. —*Field.*

Successional Cabbages from the Old Stumps.—Any authoritative work on gardening will tell you, with regard to Cabbage, to sow in autumn, spring, and midsummer, and to plant as often—a course of practice which most gardeners have discovered to be quite unnecessary. Cauliflowers and Brussels Sprouts cannot always be had just when wanted; but tender Cabbage—and what is nicer or more wholesome?—may be had with very little management. Supposing we plant Cabbage in autumn, late, or in spring, they will come in for use nice and tender towards the beginning of summer; but, as the household is generally not able to use them as fast as they grow, the heads are allowed to swell until they burst, or go to seed or rot, and eventually become quite useless for cooking purposes. This, I am quite aware, is what takes place in nine cases out of ten with the Cabbage crop in summer; and, consequently, it is imagined that another successional planting is required to continue the supply; but this is a mistake. In gardens from which large establishments have to be supplied, it is seldom that more than one, or at most two, plantations are made during the twelve months; and the reason is this—that, as the Cabbages are ready, they are generally wanted, and a certain number of heads are cut daily; but the experienced gardener does not cut the head off at the surface of the soil, but just at the neck, leaving a few of the bottom leaves. Consequently, before the quarter has been cut over the first-cut plants have made another break and become furnished each with a whole cluster of young succulent heads, which fold immediately, and are fit to cut before the first heads are quite finished. The plants will even break and fold a third time, and in this way a quarter of Cabbage may be made to afford a supply nearly all the year round. The vigour, free growth, and tenderness of the heads will be greatly promoted by frequent stirrings of the soil between the rows, and mulching with any loose material, such as short Grass or leaves, at command. Cut your Cabbages, therefore, if you have to give them away to your neighbours, before the heads get over ripe and useless, and you will have a continuance of young and tender heads such as most cooks prefer to heads which are large, white, and hard. To ensure a winter crop, in case of the sprouts being run upon too much, a planting may be made in August or the beginning of September of some dwarf kind, and also the Enfield Market variety.—J. S. W.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Potato Disease.—The soft white-looking Potato tubers found among early Potatoes after being cooked are those in which there is incipient disease, and such Potatoes are always the first to go wrong when a change of weather takes place. Thunderstorms, followed by cloudy drizzling rains and fogs, hasten on the lurking malady at a great rate: it shows itself all at once, to the astonishment of those who had no idea that disease was lying in wait, as it were, ready to be developed. This has been the case in previous years, and the same thing will happen this year within ten days or so. Then every one will say that their Potatoes were destroyed in a single day or night. This is, to some extent, the reason why nothing more is known of the cause and cure of this disease than there was nearly thirty years ago. The next fortnight, as I have predicted, will produce a great outcry about such sudden attacks, as if disease really ever did attack the Potatoes suddenly.—JAMES BARNES, *Exmouth.*

Recent Discovery of Guano.—A short time ago, some extensive beds of guano were discovered in Peru, to the south of the Province of Tarapaca. An examination of the beds has recently been made by two surveyors, who were sent out by the Central Board of Engineers of Lima, Peru. Their report is of very great interest, as it shows that several large beds of guano, of excellent quality, exist in that locality. Those which have been surveyed, are estimated to contain nearly 8,000,000 tons; one of them alone contains 5,000,000 tons of fine quality. These fortunate discoveries not only remove all fear of a present failure in the supply of guano, but indicate that there are yet other undiscovered beds in existence, which will provide a practically inexhaustible supply.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

MANY annual flowers, such as *Nemophilas*, *Clarkias*, and many other species, although exceedingly beautiful while in bloom, are yet of short duration, even during favourable seasons, and, of course, more so during such seasons as the present. They should (if the seed is not required) be cleared off as soon as their beauty is over, and be immediately replaced by some other species of plants from the reserve garden. Attend to the various sorts of plants in the flower beds, as regards training, pegging down, watering, &c; and regulate the growth of standard and pyramidal specimens of *Fuchsias*, *Pelargoniums*, *Tropæolums*, *Clematides*, &c.; while drooping plants in baskets and vases, will also require to be occasionally regulated and trained, so as to be made to depend gracefully over the sides, and around the margins of the same. Plants suitable for this purpose, are the various sorts of Ivy-leaved *Pelargoniums*, *Clematides*, *Convolvulus*, *Maurandias*, *Lophospermums*, and many others. Hardy shrubs and trees have now nearly finished their annual growth, and their foliage has, in most instances, attained its full size, and has also acquired the hue or colour of maturity; so that the present is a very appropriate time to make notes having reference to any contemplated thinning out, or other alterations which may be deemed desirable, and which it may be intended to carry out at a later period of the season. In all cases, however, where it is intended to attempt the improvement of garden and park scenery, whether by the removal, or transplantation of existing specimens, or by the introduction of new varieties, it is necessary in either case to exercise considerable care in the matter, and to make as sure as possible of the adaptability of newly-introduced plants to the situations where they are required; taking into consideration the habit of growth and form which such trees are likely to assume when in a fully developed condition, whether they will be of drooping habit, round-headed, or of pyramidal form; even the colour, form, and size of foliage should have careful consideration. The character and quality of the soil should also have due weight in the forming of selections of trees and shrubs, as it not unfrequently happens that certain species will succeed admirably in soils where other members of the same family will almost invariably fail. As an illustration of this, it has often been observed that where *Picea Pinsapo* succeeds well, *Abies Douglasii*, on the contrary, fails, and *vice versa*. It happens not unfrequently among Coniferous trees that rival leaders are produced, and, whenever this is the case, the strongest and best-placed shoot should be selected, and all others at once cut off; otherwise, the progress of the specimens will be greatly retarded, and their symmetry destroyed. The terminal buds in the leading shoots of valuable young Conifers are often injured or destroyed by insects, and this is difficult to prevent, as the injury is mostly inflicted before it is observed. Birds will not unfrequently cause a like evil by repeatedly perching upon the end of the leading shoots, but this may be prevented by tying to the upper part of the trees a piece of wire, the upper end of which should be made exceedingly sharp, and this sharpened portion should extend an inch or two in advance of the terminal bud, which will effectually prevent birds from perching upon it. The very dry and hot weather which we are now experiencing is by no means favourable for the operation of budding *Roses* or other species of ornamental trees; but it should, nevertheless, be proceeded with on every favourable opportunity. In inserting buds in the Briar keep them as close to the stock as possible, as this lays the foundation of a well-formed head, and the shoots, when they grow, will appear to spring from the top of the stock. One of the best materials for binding the buds is coarse knitting cotton. Good soft bast, which should be wetted when about to be used, will also answer the purpose very well; but, whatever material may be used, the bud should be bound firmly above and below, so as to bring its base into close contact with the wood of the shoot it is budded on. All budding upon the Briar stock should, if possible, be accomplished during the present month, or early in the month of August; but it may be successfully performed on the Manetti stock up to the middle of September. Many other hardy trees and shrubs are perpetuated by means of budding, and the present is the proper time to attend to such matters. From some unknown causes, Nature not unfrequently develops abnormal sports, or *lusus nature*, of various forms, very frequently in deviation from the ordinary green colour of vegetation, or in the production of shoots or branches having coloured or variegated foliage; so that amateurs, and cultivators generally, should always be upon the outlook for such occurrences, and should take immediate advantage of the same, otherwise valuable and ornamental additions

to our hardy trees and shrubs, and to plants generally, would, and no doubt are, sometimes be lost to horticulture. So, whenever any striking or apparently valuable sport develops itself, it should be carefully encouraged; and, if produced by a hardy shrub or tree, the best and most rapid means of perpetuating and increasing the same is by budding it upon young plants of its normal or green-leaved congener. When sports are produced by tender or soft-wooded plants, they can generally be perpetuated by cuttings.—P. GRIEVE, *Culford Gardens, Bury St. Edmund's*.

Indoor Plant Department.

Give weak manure-water to gross feeding conservatory plants, and from specimens planted out in borders remove all superfluous shoots and suckers. *Tacsonias*, *Passifloras*, *Bignonias*, *Habrothamnuses*, *Loniceras*, *Maréchal Niel* *Roses*, and other climbers, must be frequently regulated in growth, not so much by means of shortening their shoots as by removing the weakest of them. *Fuchsias* trained to rafters require thinning, and *Clematides* tying to trellises. Do not allow deciduous climbers to intertwine with evergreen ones, as they are apt to spoil the latter. Keep up a succession of *Hydrangeas*, zonal, show, and sweet-scented *Pelargoniums*, *Fuchsias*, *Coleuses*, *Lobelias*, *Salvias*, *Cockscombs*, *Balsams*, *Schizanthuses*, and similar plants, and transfer to frames or the greenhouse such plants as have done flowering. Heaths, and some other early-flowering, hard-wooded plants, may now be set out of doors on a bed of ashes, plunging the pots in Cocoa-nut fibre, or some such material, to keep the roots cool and moist. In greenhouses, old plants of *Agapanthus umbellatus* will now be flowering abundantly, and should have plenty of water and a sunny position. Plants of *Hebeclinium ianthinum* should have been cut down after flowering, and should now be kept moderately dry for a time, unless it is necessary to force them early. Cut in hard-wooded *Veronicas* that have done blooming, so as to encourage fresh growth. Keep plants of *Lisianthus Russellianus* in a warm, moist place, and re-pot them as often as they require it. Pot off seedlings of *Primula japonica*, and keep them out-of-doors, where they form stronger plants than if nursed under glass. Shift *Statice* as they require it, and, when they begin to flower, give them manure-water, or place a mulching of manure over the surface of the soil in the pots in which they are growing. Lemon-scented *Verbenas* and *Fuchsias* should be started into growth, as required; those already started should be kept pinched in, to make them bushy. Plants of *Kalosanthes* should now have some assistance in the way of stimulants, as should also *Lilies*, and some soft-wooded plants. *Erythrin*as in pots should be grown in a cool and light house near the glass; they require plenty of water, and their main branches should have supports of some kind to keep them in proper position. *Bonvardias* that were cut back after flowering should now be making good wood; they must, therefore, be kept moist and warm for some time yet. *Persian Cyclamens* should be kept in cool and shady frames, or against north walls; they should receive a little water during the summer months. *C. Coum*, and similar kinds, should also be kept moderately dry, but not too much so. *Azaleas* that have done blooming, and which have had their seed-pods picked off, should be re-potted, if necessary, and put into a warm pit, where heat, moisture, and shade can be given them. *Camellias* also make good growth under similar conditions, as do also *Citrons* of various kinds. Pinching-in should be practised freely until the plants have attained the form it is desired they should assume. Keep the atmosphere of stoves moist by syringing not only the plants, but the stages and walls, and likewise by sprinkling the floor with water. *Poinsettias* should now be started into growth; they should be propagated by means of cuttings and eyes, and the young plants should be kept shifted on as they require it, and set near the glass. Plants of *Euphorbia jacquiniæflora* must be kept growing, and also near the glass, so as to ripen the points of the shoots. Pot on young plants of *Sanchezia nobilis*, *Scutellaria Mocciniana* and *Ventenati*, *Pentas carnea*, *Linum trigynum*, *Monochaetum ensiferum*, *Centradenias*, *Eranthemums*, and others, using a compost of loam, thoroughly-decomposed manure, and a little peat. Increase the stock of *Achimenes* by means of cuttings; *Gloxinias*, by using good and well-developed leaves as cuttings; the fine-leaved *Begonias* in the same way as *Gloxinias*, and also by placing a whole leaf flat on the surface of a pan filled with silver sand and peat, and surfaced with sand, affixing the leaf thereon with pegs, cutting or breaking the ribs at intervals, and sprinkling some sand over the surface of the leaf; if kept damp and shaded, leaves treated in this way soon form buds at every break. The herbaceous kinds are best increased by means of cuttings. Keep *Epiphyllums* in a nice growing temperature, and *Eucharis amazonica* plunged in bottom heat, in a moist stove and flooded with water. Pot seedlings of *Cyperus alternifolius*, give them plenty of heat and moisture, and they will form, when one or two years old, fine plants for table decoration. Keep *Dracænas*, *Crotons*, *Ananassas*, and other fine-leaved plants, near

the glass, in order to bring out their colours, but preserve them from strong sunshine. *Dipladenias*, *Allamandas*, and similarly habited plants, hitherto run along the roof just inside the glass, on threads, may be taken down as they come well into bloom, and trained so as to more fully exhibit their beauty. In the case of suspended baskets, remove any plants that appear to be exhausted, and replenish with fresh material; rather, however, than lift out many of the plants, plant the basket afresh, retaining such as are in good condition. Ferns, *Selaginellas*, *Tradescantias*, *Begonia scandens*, variegated *Panicum*, *Fittonias*, *Achimenes*, some of the creeping *Ficus*es, &c., do well in baskets kept in stoves; and for conservatory and balcony baskets take Ivy-leaved and sweet-scented *Pelargonium*, brilliantly coloured *Lobelias* of the *Erinus* section, *Petunias*, *Mesembrianthemums* of different sorts, *Tropæolums*, *Isoplexis gracilis*, *Gazania splendens*, *Lysimachia nummularia*, *Ivies*, *Musk*, *Convolvulus mauritanicus*, and many kinds of Ferns and *Selaginella*.

Orchids.

Shading and watering now constitute the chief operations in the Orchid-house, and the cultivator will, in most cases, find it necessary to keep his plants well sponged over at least once a week, so as to keep red spider and thrips in subjection. Occasional syringings are very advantageous morning and evening during dry hot weather, and sundry fumigations with tobacco will be necessary to destroy green or yellow aphides, which rarely fail to put in an appearance either on the young growths or flower-spikes. The cool house must now be ventilated as much as possible, opening the doors on hot days and covering the openings with tiffany, which should be kept wet by repeated syringings; applications of this kind in the case of cool Orchids, deserve the attention of cultivators who often find their plants suffering from too much summer heat. The air is cooled as it passes through the wet tiffany, and the latter also serves to prevent draughts and dust.—F. W. BURRIDGE.

Indoor Fruit Department.

In early Pineries, in which the fruit has been cut, the plunging material should be turned out, and the pits thoroughly cleansed and lime-washed. Suckers should be firmly potted into 6-inch pots, using fibry loam and a little charcoal for them; after being potted they should be either plunged in front of late succession plants or in separate beds, and shaded for a short time during bright sunshine. Vines swelling fruit should be allowed abundance of moisture, both at the root and in the atmosphere, and late Vine borders should receive good soakings of manure-water, either from the farmyard or the cesspool; immediately after the manure-water has been applied, another soaking of pure water should be given, in order to dilute the first application, and to wash it down. Figs should be allowed abundance of moisture at the root, overhead, and in the atmosphere. Stimulants should not be too often applied to Figs in the way of manure-water, but they thoroughly enjoy a mulching of good fibry loam and rotten manure. Peach and Nectarine trees that have done fruiting should be well syringed and supplied with water, and also freely exposed to the air. Melons that have done fruiting should be either thrown away and replaced by young ones, or cut back and encouraged to start anew; but young plants are best.

Hardy Fruit.

Complete as soon as possible the propagation of Strawberry plants for forcing and the forming of new Strawberry beds. Young plants pay best for growing. Some only fruit their plants once. They lay the earliest runners in pots, feed them freely throughout the season, plant them out on rich deep ground in the autumn, gather a fine crop, propagate fresh plants, and dig the one-year old ones in. This is carrying a sound principle to extremes. As a rule, the plants will carry more fruit the second year than the first, and they ought to be allowed to stand over for a second crop; unless, indeed, the almost better plan is adopted of forcing the young plants the first season, and then planting them out as soon as they have finished fruiting under glass. From such plants the first crop in open quarters is the best. Whether the liberal treatment in pots, the development of the leaves under glass and close to the light, and the abnormal strength thus thrown into the crowns, or the extraordinary activity and vigour of the roots, be the causes of the unusual fertility is uncertain; but, that it exists in forced plants, is proved afresh by each year's experience. The next best and most profitable method is to propagate plants, and treat them in every way as if intended for forcing, until the end of September, when they should be planted out on a bit of the best ground in the garden, in rows 2 or 2½ feet apart, the plants being 18 inches or 2 feet asunder in the rows. Another mode, involving less labour and the loss of a season in the age of the plants, is to remove the strongest runners as soon as rooted, plant them in beds or rows 6 inches apart, leave them there,

kept free of suckers, all flowers and fruit being picked off during the next season, and plant them out in the autumn as recommended for this year's strong plants. Such plants may also be allowed to fruit for one or two years. Two good crops, however, from the same plants, are as many as can be profitably taken from them. Attend to watering and mulching Strawberry plants turned out after forcing. These, properly cared for, will come in after the Elton Pine and other late sorts, and will carry the Strawberry season far into autumn. By planting fresh runners of Alpines or Hantboys every year, late Strawberries may also be gathered for ices. The Hantboys give a flavour unique among fruits, unless, indeed, a little of the same aroma may be detected in the American Musk Grapes or Mr. Pearson's hybrid Grape *Ferdinand de Lesseps*. It is most important to guard these late Strawberries from birds, and from too much sun. The latter burns out the quality, and flavour, as well as hurries the fruit over; whereas the object of the cultivator is to prolong it as late as possible. It is somewhat singular that cultivators, who do so much to get things early, take so little pains to have them late, though, to the true lover of Strawberries, these luscious fruits in September and October are just as much valued as in February or March. The late autumn-bearing Raspberries, if cut over by the ground, as they ought to have been last winter, will now require staking, as they will be coming into full bearing. Thin out the young canes of summer-bearing varieties, only leaving from three to five canes to a stool. Also cut out the bearing shoots as soon as the fruit is gathered, in order to admit more light and air to the young wood. If the latter is weak, it may be much strengthened by thoroughly soaking the roots with sewage, or surfacing with manure. The size and quantity of next year's crop will be determined by the vigour and size of the young wood produced and matured this autumn. Few fruits are in greater demand than Raspberries for preserves, and also for dessert, where they are liked; and few fruits pay better for liberal culture. The young canes, when strong, should also be loosely staked to protect them from being broken off by the winds. Should dry weather prevail, late Gooseberries and Currants will swell out finer and keep longer if they are well soaked with house sewage, and mulched over the roots with 6 inches of good manure. Net the fruit carefully from birds.—D. T. FISB.

Kitchen Garden.

Unless late Peas are heavily mulched and thoroughly watered two or three times a week, the crop is likely to be a scanty one. The advantages of sowing in well-manured trenches are now so apparent as to require no argument in favour of the general adoption of the plan for all Peas sown after the 1st of May, and, especially is this desirable in poor dry soils. Beyond a passing thunder storm, there is no likelihood at present of any considerable rainfall; sowing small seeds, therefore, will be useless, unless the ground is thoroughly soaked with water before sowing, and shaded immediately afterwards. In difficult seasons like the present, it will be better to make small sowings at more frequent intervals, and to pay particular attention to shading. Branches of Hazel, Ash, or Elm, may be obtained from the undergrowth in plantations almost everywhere without doing any permanent injury; and, although, the leaves will wither in a few hours, they will afterwards adhere to the branches a long time, and form a grateful shade to any crop just commencing growth, where frequent watering, if unaccompanied with frequent stirring of the surface, would render the soil almost impervious. Recently planted Celery would be much benefited during this scorching weather by being shaded with branches in this way; and, as they will permit an abundant circulation of air, there is no danger of the growth being weakened thereby. It is, in fact, necessary to adopt every expedient to check evaporation, and, as far as possible, to keep things in a growing condition, almost regardless of appearances. Early Potatoes are now ripe and may be lifted and stored at once; the tubers in consequence of the drought are smaller than usual, but are of good quality, without any symptoms of disease. Those intended for seed should be laid in an open shed with a northern aspect, where they will gradually become green, and in this condition they are capable of resisting a good deal of frost, and are less likely to make an exhausting and premature growth. During the winter they should be kept cool and in thin layers. The very best plan is to place them, at the approach of winter, "crown upwards," in shallow trays or boxes, one layer only in a tray. And there is no better place to keep those intended for early planting than under a greenhouse stage, where only sufficient artificial heat is used to keep out frost, and where, at all other times, an abundant circulation of air is admitted. Late Potatoes, that have not been injured by frost, and have consequently made sufficient growth to shade the ground, are at present looking well, but nearly everything, with the exception of grain crops, are suffering from the prolonged drought. Where it is desirable to plant a house of Cucumbers for

autumn use, a sufficient number of seeds of the Telegraph, or any other approved variety, may now be sown for that purpose. There is no necessity for any artificial heat at present. Soak the seeds in water for twelve or eighteen hours before sowing; plant each seed in a small 60-pot; shade, and keep close till the plants are up. Provide several more plants than will be required, and, when planting, select the strongest.—E. HOBDAV.

Market Gardens.

The principal work in these now consists in stirring the surface of the soil about growing crops, and in gathering fruit. The principal crops at present ready for market are Cauliflowers, Cabbages, Peas, Broad and French Beans, Potatoes, Onions, Carrots, Vegetable Marrows, Cucumbers, Globe Artichokes, &c. Cucumbers producing heavy crops are assisted by applications of manure-water and guano-water; toads are kept in Cucumber-frames to keep down wood-lice. Vegetable Marrows are mulched. Tomatoes are now receiving close attention in the way of watering, for the retention of which drills are drawn on each side of the plants; they are also mulched with short dung. This crop is being deprived of all suckers and lateral shoots, preserving only the main stem, or at most only such shoots as are bearing good clusters of flowers or fruit. They are gone over every few days, thinned, and tied, the latter operation being performed so as to place them on the sunny side of the stakes. French Beans have begun to bear a fair crop. They are commonly grown in single lines from 2½ to 3 feet apart; between every alternate line is a row of Lettuces. The last sowing has just come up, and the ground about them is being loosened. Among Onions there is, as yet, little appearance of canker. Cauliflower ground that has become vacant is now hoed and afterwards loosened with a fork, but not turned over. The ground, after being loosened, is planted with Coleworts, about 14 or 15 inches apart each way. Good-sized plants are used for this purpose, as they do not yield so soon to the influence of drought. The first planted-out Celery, since the rains have come, is growing apace, and being in drills about 6 feet asunder, the sides of the ridges are broken with the hoe, so that a little of the soil may fall round the crowns. On the ridges, or rather curved spaces elevated to about 6 or 8 inches in the middle, are planted Lettuces or Coleworts for winter use. The Celery receives a good deluge of water now and then, and, if convenient, a little manure-water is likewise given to it. To Snow's Winter White Broccoli a little earth is being drawn; this is the kind that furnishes the early winter supply. Brussels Sprouts that were planted between lines of Potatoes, are now growing rapidly. Ground that has been occupied by the second and third crops of Lettuces, is again planted with a line of Savoys, and one of Lettuces alternately, the rows being about 14 or 15 inches apart. Gherkins are progressing favourably. Superfluous young wood on fruit trees on walls is being removed, and useless and unproductive old fruit bushes are uprooted and burned as soon as the fruit they have borne has been cleared off. Frames, hand-lights, &c., for next season's work are being painted, and otherwise put into thorough repair.

GARDEN PARTIES.

The genius of the age, says the *Echo*, has discovered that in fresh sweet gardens, where stuffiness and over-breathed air are unknown, and where tea, ices, and Strawberries are tenfold more delicious than within doors, it is possible for the fortunate possessors to give parties where every social enjoyment may be had in perfection without any of the drawbacks which attend them when taken at night in heated rooms, and among flaring lights, at hours when every rational being ought to be asleep in bed. Of course it is but comparatively a few even among wealthy people who can offer such pleasures to their friends. Still we are persuaded that the great success of Garden Parties will have presented to our intelligent country-women something like a *beau idéal* to which assemblies ought to be made to approach as nearly as possible; and that a great deal will be done in consequence to make such gatherings more healthful and enjoyable. Few can open to their friends half an acre or so of close-shaven turf, sheltered with trees and adorned with roses, where easy chairs and Persian rugs, and tables, laden with services of coffee, ices and tea, make a score of groups, each worthy of Watteau. But hundreds might arrange (were such things to be well understood) that their rooms should open out with large French windows upon terraces or smaller gardens where the shade of two or three trees would be enough to give freshness. New houses of the handsomer sort would also be built in the suburbs, expressly with a view to possessing so great an attraction. Nor does it seem out of question that, as enterprising people have found it a good trade to let out ballrooms and dining-rooms, so others might keep a handsome, suitable garden in a convenient locality in the suburbs, which might be hired at will by

party givers, during the season, enabling them to offer their friends a far more charming entertainment than any indoors. Nor need we think of such pleasures as being confined to the rich. Have we not lately published a long string of requests for help in providing "a Day in the Country" for thousands of city-pent children. This is their Garden Party, and we hope that all of them will succeed in getting it. Very lately the Dean of Westminster gave to the exhibitors of Window Gardening what was practically a delightful Garden Party in the College Garden, and we hope his example may be followed by similar gatherings. The more we all herd together in smoky towns the more we need the repose and fresher air of gardens removed from the roar and rattle of the streets; and the more busy and anxious our lives, the more desirable it is that our pleasures should not be robbed from the hours when Nature needs sleep, and taken amid heated rooms and the sight-destroying glare of lamps, but enjoyed as veritable oases of greenness and freshness amid the wilderness wherein we dwell.

THE CURE OF ALKALI LANDS.

UPON the plains in our new territories on both sides of the Rocky Mountains, there are vast tracts of alkaline soils so much impregnated that they yield nothing but Sage brush and Grease wood, or are entirely barren. If cultivation is attempted, a white crust soon forms upon the surface, and all cultivated plants die. There are millions of acres of these lands rich in all the elements of plant food, but made worthless by the superabundance of alkali. It has been generally supposed that these lands could never be made productive. The settlers of Utah have been entirely successful in treating these lands, and have done a good work for the nation in demonstrating their great value. We some months ago visited the Jordan valley, and saw meadows with a thick heavy sod, yielding three tons of hay to the acre, that were once entirely barren. We also saw Wheat fields, that would turn fifty bushels to the acre, reclaimed by the same process. This matter has attracted the attention of the British Government, as they have large areas of similar lands in India, that they have never been able to make productive. The secret of success in reclaiming the land lies in a process of leaching the surface of the soil, more or less prolonged according to the quantity of alkali the soil contains. The field to be treated (of any convenient size) is first surrounded with a ditch about 3 feet deep, to carry off any water that may be run upon it at the upper edge. It is then laid off into strips about two rods wide by deep furrows running across the slope. The upper side of the furrow is ridged high enough to make a shallow pond covering the whole surface of the strip. The next breadth of the meadow is prepared in the same way, and so on until the whole is finished. Water is then taken from the irrigating ditch and turned into the upper basin, and this communicates with the lower basins until all are flooded. The water is allowed to stand for a few days in these shallow pools, when a frothy scum rises to the surface. It is then drawn off, carrying the scum with it, into the outside ditch. As this large ditch is lower than the surface, the water charged with alkali is all the while draining off through the soil. The water is kept running over this land summer and winter, for one or more years, according to its character. In some obstinate cases it is kept in the leach four or five years, before it will bear good crops. In others a single season will subdue it. The best crops for the first season after treatment are found to be Beans, Cotton, summer Squashes, Melons, and Onions. A few inches of sand spread over the surface is thought to have a beneficial influence, facilitating the germination of seed, and preventing the formation of crust. It is agreed by all parties who have reclaimed these soils that they are the most productive lands in the territory, bearing successive years of cropping without any apparent diminution of yield. In some parts of the territory they have succeeded in reclaiming these lands without irrigation, but this is where there is more rainfall than in the Jordan valley, and probably where there is less alkali in the soil. Heavy rainfall alone in some cases, has made the land productive. To facilitate the action of the rain the land is ploughed up and down the slope that the water may run off freely upon the surface. The land is ploughed frequently, and the particles undergo a change as they come in contact with the atmosphere, sun, rain, and frost. There are large tracts of these reclaimed lands in the territory yielding magnificent crops, and fine gardens and orchards loaded with fruit.—*American Agriculturist*.

THE following announcement appeared in a San Francisco paper:—"The gentleman who took, by mistake, a quantity of garden-hose from a residence in Geary Street, near Gough Street, is requested by the owner to call and get the nozzle, as the hose can be of no material use without it."

GARDENING NOMENCLATURE.

"WHAT'S in a name?" is a question that has often been raised, and, doubtless, as often settled—at least to the satisfaction of the questioner. Now, whether taken from the political, literary, social, or commercial point of view, there is, we apprehend, much in a name; and, if we descend from the general to the particular, we fancy that, from a horticultural point of view, it is not a matter of indifference. True it is that our greatest poet has said—

A Rose by any other name would smell as sweet;

but we take leave to doubt whether it would always seem as fair. We have observed that certain names at once take hold of the public, are in everyone's mouth, and make the novelty popular from the beginning; whereas, in other instances the reverse of this is the case, the high qualities of the novelty require knowing to make the name popular. If we look back on the past, or take the existing nomenclature of plants, we find much that is incongruous and in bad taste. Botanists and horticulturists have alike erred here. The former have transgressed by adopting a frightful terminology, by compounding words in different languages, and by applying words which do not correctly interpret facts. As an instance of the latter, the word "*coccinea*" (scarlet) is often applied to things crimson; "*cœrulea*" (blue) to purple; and "*alba*" (white) to things which would hardly pass as such in the murky atmosphere of the sootiest towns. The horticulturist, even of our own time, too often gives the reins to fancy; and, after reading some of our plant catalogues, one would almost think that the days of bright blue Roses and luscious out-of-door Grapes had at length arrived. It may be pleasant enough, and sometimes temporarily profitable, to give the reins to fancy, when the practice not only amuses the mind, but, at the same time, fills the pockets of the performer. But there is a large and increasing class of amateur gardeners in the community, matter-of-fact people, to whom this method of proceeding is obnoxious. There is delusion in it. The purchaser acts, hopes, realises, and is disappointed. The object has not fairly answered the character given of it. We do not accuse the giver of these highly-coloured names of wilful exaggeration. The culture of flowers is not exactly that matter-of-fact occupation which some would represent it to be. There is poetry in it, and the ruddy glow of imagination will often unconsciously tinge the objects over which it delights to hover; but, if the names are applied with a poet's license, the descriptions should at least be precise, definite, and truthful. If horticulture is to become a science to the few, and remain a source of recreation to the many, its votaries must remember that even in poetry, and certainly in actual life, the imagination must be restrained within due bounds, or the result will be neither intelligible nor satisfactory. But these are not the only points on which reform is needed in the nomenclature of plants and flowers. Where is the cultivator who would not rejoice to see the long French names of Roses and other plants reduced to a state in which they might be spelt, pronounced, and understood by all? Could not the nurseryman into whose hands these novelties first pass translate such names as are translatable, and re-christen others? For many of such names are at present a mere jumble of unintelligible sounds to those who are the ofttest called on to repeat them. To prevent confusion, this work might be delegated to some tribunal whose authority would, by common consent, be acknowledged and followed. We once knew an ingenious labourer who remembered the name of the Rose "*Je me maintiendrai*" by assimilating it with the words "*Jenny maintain me*;" and we heard more than one philosophic nurseryman mourn over the loss of time incurred in writing "*Souvenir de la Reine d'Angleterre*," 500 time repeated, when "*Ajax*" or "*Ino*" would have answered every purpose. Further, something may be said on the fitness of names. A flower that would well become the name of "*Blushing Bride*" would make a very indifferent "*Alderman*;" nor should we expect to see exactly the same complexion in a "*Vulcan*" as in a "*Venus*." A large Gooseberry might appropriately bear the name of "*Achilles*," which would be far more euphonious and agreeable to ears polite than such names as "*Bang-up*" and "*Thumper*," which exist plentifully among this class of fruit. In this, however, as in other instances, we would not advocate a change of names already established—they are short and easy enough, if homely or provincial—but that future names be chosen from a more refined vocabulary. Finally, we have seen it somewhere suggested, and think the suggestion a good one, that newly-introduced species, the botanist's plants, should bear names coined from the Latin or Greek languages expressive of some prominent feature; and the horticulturalist's plants, what we are used to regard as mere variations of species, should have applied to them popular names in our own language. The names of the good and great ones of our own time, and of all time, offer for this purpose a rich repository, from

which we might freely draw. These suggestive remarks are thrown out for the consideration of those who usually name our plants. There are a many cries for reform just now; and, among small things, it is nowhere more needed than in our horticultural nomenclature.—*Florist*.

Analyses of Guanos.—Dr. Voelcker has had transmitted to him, by the Secretary of the Admiralty, thirteen samples of guano, viz., five from Pabellon de Pica, three from Punta de Lobas, and five from Huanillos. In all cases these samples were taken from the deposits at various depths. The Pabellon guanos Dr. Voelcker describes as containing little moisture, and as in a fine powdery condition. In round numbers they contain from 8 to 13 per cent. of ammonia. They are inferior to Chinchá, but nearly equal to Guancoco. The Punta de Lobas guano is drier than Guancoco. The Huanillos guano is dry and powdery, of a light brown colour, and contains from 8 to 12½ per cent. of ammonia, and from 2½ to 6 per cent. of sand. One sample from Pabellon Dr. Voelcker compares favourably with the best old Chinchá guano.

Statues in London Squares.—There are several figures and effigies, particularly in the neighbourhoods of Trafalgar Square, Waterloo Place, and Hyde Park Corner, which the Metropolitan Board of Works would cover themselves with glory by buying up and removing to sequestered spots in the country—the heart of a forest, or the middle of a wood. Any little addition to the rates which such a judicious outlay might entail would, we are persuaded, be cheerfully borne by the inhabitants of the metropolis. Mr. Punch will be most happy to supply the Board with a list of desirable emigrants.—*Punch*.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

JULY 15TH.

THIS meeting, one of the best of the season, owed much of its excellence to the fruit prizes offered by Messrs. Veitch & Sons. Messrs. Carter & Co., too, added much to its interest by sending the finest collection of named varieties of Lettuces we have yet seen, as well as a fine series of dried specimen Peas. Mr. B. S. Williams had several groups of rare and choice decorative plants; and Messrs. Jackman staged a fine collection of hybrid Clematises.

Pelargoniums—These were well represented, and, on the whole, of good quality. The best collection came from Mr. Catling, gardener to Mrs. Lermite, of Finchley. It contained fine examples of good culture, some of the plants being nearly 4 feet through. The varieties were:—The Bride, white; Wm. Catlin, vivid scarlet; John Williams, salmon, and a perfect mass of bloom at least 4 feet across; Virgo Marie, white dark zone; Corsair, a splendid variety with compact trusses of fine vivid scarlet flowers; and Mons. Rendatier, bright salmon. This was one of the best plants in the show, and a dense shield of flowers nearly 5 feet through. The same exhibitor also had the best group of nosegay varieties. Mr. W. Paul, Mr. Chas. Turner, and others, staged excellent collections of golden and bronze Zonals, Ivy-leaved and other varieties; and the first named exhibitor also sent two excellent stands of cut flowers. In the case of new varieties, only one plant should be shown in the same pot, more than one, a practice sometimes resorted to, puzzling the public and conveying no correct idea of the true character or habit of the plant.

Fruit.—The show of fruit staged in competition for Messrs. Veitch's prizes, to which we have previously directed attention, was one of the best we ever remember to have seen at South Kensington of late years, and formed the chief attraction of the exhibition. It is once more evident that a good show of fruit is as possible as heretofore, if the prizes offered are sufficiently liberal, as they were on this occasion, to induce the best growers to cut their finest fruit. Mr. W. Coleman had a really fine collection of ten varieties, Black Hamburg Grapes and Royal George Peaches being unexceptionally fine and well-coloured, as was also a splendid dish of Lord Napier Nectarines. Rivers's Early Apricot, May Duke Cherries, and brown Turkey Figs were also of excellent quality. Mr. G. T. Miles, gardener to Lord Carrington, also had a good collection, the Black Prince Grapes being excellent. In the same collection were fine Bellegarde Peaches, Violette Hâtive Nectarines, Jefferson Plums, and a fine dish of Strawberries, named Souvenir de Reefs. Mr. T. Jones, of Frogmore, also had a nice group; the excellence of the other dishes being somewhat marred by a faulty Pine. Mr. Bannerman, gardener to Lord Bagot, had a really fine group of six dishes, the Black Hamburg Grapes being very fine, as also were the Muscats, although not so perfectly finished as is desirable. The Royal George Peaches in this collection were nearly perfect in size, and richly coloured, the Nectarines and Figs being also of excellent quality. This was one of the most creditable collections staged, and well deserved the award it obtained. Mr. J. Watson also had a good assortment of fine fruit, the Grapes and Dr. Hogg Strawberries being excellent in every way. The last-named fruit is one of the largest and best for exhibition purposes, and always appears to bear packing and carriage well. Mr.

W. Bones had Black Hamburgh and Muscat Grapes in excellent condition, good Strawberries, and a nice Golden Queen Melon. Mr. D. Wilson, gardener to Earl Fortescue, staged ten fine Melons, to which an extra award was made. Mr. W. Sparkes had six very fine Queen Pines, to which an extra prize was given, while the best three Queens came from Mr. Stirling, Park Weir, Swansea, and Mr. D. Wilson was second with splendid smooth Cayennes. Grapes were well represented by fine large-berried clusters from Mr. Coleman, Mr. Deaville, Mr. Loudon, and other well-known exhibitors. Mr. R. Fleming, Sandhays, Liverpool, staged three immense clusters of Black Hamburgs, the berries being too closely packed to allow them to swell properly; otherwise, they were splendid examples of good cultivation, and deservedly obtained an extra prize. The first prize for white Grapes was taken by Mr. Loudon, who had Golden Champion, a really noble Grape, and a bunch of Muscat of Alexandria. Peaches were especially fine, there being about two dozen dishes staged, and all were above average quality. The varieties were Barrington, Bellegarde, Noblesse, Grosse Mignonne, Admirable, Royal George, and Teton de Venus, the latter being a large and fine fruit for table or exhibition purposes. Four splendid Queen Pines, weighing in all 19 lbs. 3ozs., were placed before the fruit committee and awarded a certificate, these having, unfortunately, arrived too late for the fruit show. They were grown by Mr. Harris, gardener to Mrs. Vivian, Singleton, and were considered, by the entire committee, to be splendid examples of superior cultivation. Mr. Woodbridge, of Syon, sent fine specimens of Musa Champna, a variety from Trinidad. The fruit is about 3 or 4 inches in length, and thicker in proportion than that of *M. Cavendishii*. These were pronounced to be of excellent flavour. Mr. Perkins sent an Enville Queen Pine, rather irregular in shape, but weighing 8 lbs. 10ozs. Melons, grown with their roots in water, came from Chatsworth, but were not considered to be of first-rate flavour. It was observed at the meeting that the best Melons in Persia are grown on floating islands or gardens, with their roots constantly in water; but that it is uninterrupted and bright hot sunlight which develops their flavour, much moisture at the root being essential to counteract the dryness of the air.

Miscellaneous Subjects.—Messrs. J. Veitch & Son sent a splendid group of new and rare decorative plants, among which a collection of new Gloxinias, with large and remarkably richly-coloured flowers, call for especial notice. In this group was one of the finest plants of the beautiful blue *Vanda carulea* that we have ever seen, bearing a stout erect spike of about fourteen flowers, the individual blooms being not only large, but more vivid in colour than is generally seen. The plant was growing in a large teak cylinder, similar to that figured and described in *THE GARDEN* at p. 547, Vol. V. The collection also comprised a fine richly-coloured variety of *Aërides quinquevulnerum*, *Disa grandiflora*, *Croton Youngii*, remarkably brilliant in colour; *Darlingtonia californica*, *Sarracenia Stevensii*, which appears to be a vigorous habit, as well as a decidedly beautiful plant; *Ficus Parcelli*, *Tillandsia (Caraguata) Zahni*, and others equally interesting, to which a silver medal was awarded. Mr. B. S. Williams, of Holloway, also had a very effective group of stove and greenhouse plants, Ferns, and Orchids, including splendid specimens of *Aërides affine superbum*, with five or six fine spikes of rich rosy-purple flowers; *A. odoratum majus*, well-flowered; *Disa grandiflora*, the rare *Dendrobium crystallinum*, and others. This group was also deservedly honoured with a silver medal. Mr. J. Aldous obtained a bronze medal for a neat and tastefully-arranged bank of flowering and foliage decorative plants. The six Hydrangeas, shown by the same exhibitors, also deservedly obtained a first prize. It is surprising what an effective old plant this is when well grown, and as it is easily cultivated, even in a cottage window, it deserves to become even more generally popular, as a decorative plant, than is at present the case. Messrs. Veitch also had four splendid stands of cut Roses, the blooms being remarkably fresh and clean, and including some of the best of the old and new exhibition kinds; and a very interesting group of Conifers, growing in large tubs. Among the latter we noticed a fresh and healthy specimen of *Sciadopitys verticillata*, the curious and distinct Umbrella Pine from Japan. This is a striking plant, and is often depicted by Japanese artists on all kinds of ornamental articles. The same group also included some of the most beautiful of the *Retinosporas*, and a fine specimen of *Abies polita*, one of the rarest and most distinct in the whole group. Pinks, Carnations, Picotees, Verbenas, and other florists' flowers, were staged in capital condition by Mr. Charles Turner and other exhibitors. Mr. Jack, Battle Abbey, Sussex, sent cut spikes of the white-flowered *Mandevilla suaveolens* from a plant which has been growing planted out in the open air during the past fifteen years. Mr. G. F. Wilson sent a collection of Lilies, including *L. Humboldtii*, *L. longiflorum*, *L. umbellatum citratum*, a distinct variety of a deep salmon tint throughout, and *L. longiflorum marginatum*, with glaucous leaves, margined with clear creamy-white. Mr. G. Thomson, Crystal Palace Gardens, sent a fine hybrid form of the *L. lancifolium* type, the individual flowers being nearly as large as *L. auratum*, and of pearly whiteness, spotted with crimson. It is supposed to be the result of a cross between the last-named plant and *L. (lancifolium) speciosum*, and has previously been certificated as a first-class variety. Mr. P. Barr sent about thirty varieties from Tooting, including several fine forms not generally met with in cultivation. Messrs. Carter sent four pots of pyramidal-trained Lobelias, very healthy and well-flowered, and also cut specimens of a fine blue-flowered Pentstemon, unnamed. Mr. W. Paul sent a collection of double Zonal Pelargoniums, amongst which George Sand, a fine pale rose; Talabot, deep crimson; François Pursatui, a rich salmon; and Jeanne Aléatière, a deep lilac-pink—deserve especial notice as being promising novelties. A fine robust plant of *Odontoglossum*

venillarium, with ten flowers on two fine spikes, came from the Society's Garden. Mr. J. George, Putney Heath, sent four new Zonals with large bright flowers; and Mr. Perkins & Sons, Coventry, sent seedling Zonal Duchess of Edinburgh, a coarse grower with immense trusses of large white flowers with a salmon eye. Mr. Chitty, Stamford Hill, sent his new Coleus, Duchess of Edinburgh, to which we have before alluded as a fine plant. Messrs. E. G. Henderson sent Pelargonium Sparkler, a richly-coloured tricolor variety of good habit. Bridal Bouquet, a silver-edged variety with white flowers. Distinction, a dwarf dark Zonal variety with bright crimson-scarlet flowers in dense trusses; and Mrs. Maxwell Masters, a fine silver tricolor well coloured. The same firm also had a collection of new Ivy-leaved varieties with salmon and rosy-pink flowers. These are so valuable for hanging-baskets, window-boxes, and balconies, that we hope to see these new hybrids grown extensively for the latter purposes. A plant of a pretty rosy-flowered *Saccolabium*, named *S. Cruikshankii*, came from Messrs. Henderson; it has erect spikes and drooping fleshy leaves of a glaucous green colour. A fine box of a new Rose named Miss Hassard came from Mr. C. Turner, who also had a fine stand of another new variety named Rev. J. B. Camm. The last-named is a fine full Rose with very fine foliage. Mr. Tipping, Richmond, sent a seedling golden zonal, resembling Golden Chain, named Golden Shower, which promises to be useful as a bedder. Mr. R. Dean, of Ealing, sent some fine cut spikes of mauve-coloured Stocks, cut Clove Pinks, Carnations, and Picotees, and three fine *Tropæolums*, the one named The Comet being remarkably dwarf, robust, and brilliant.

Vegetables.—Messrs. Carter & Co., High Holborn, sent forty-five varieties of Lettuce, many of which were of unusually fine quality, and all highly interesting in an horticultural point of view. Among them were Tom Thumb, well known as one of the best of the hearting or Cabbage Lettuces; Ne Plus Ultra and All the Year Round, both useful kinds, forming closely imbricating heads of fresh succulent leaves. The Hanson Lettuce is a novel American variety, with wonderfully fresh green succulent leaves forming a large head; this promises to be a decided acquisition. Other varieties consisted of Bath Cos, one of the very best for summer or market work. Paris white Cos, Paris green Cos, and others equally good. The same exhibitors sent a very interesting and useful collection of mounted specimens of their new Peas, each consisting of a single plant carefully dried and mounted to show the size and habit of growth, the fully-developed pod and ripe Peas being glued at the bottom. These give an excellent idea of the whole plant, and we understand Messrs. Carter intend to complete the collection as opportunities permit; and, at the same time, have offered to present them to the Society so that they may be available for future reference. Mr. Johnson, Glamis Castle, sent haulm and produce of Allen's Champion Pea, which, judging from the specimens sent, is a wonderful cropper, bearing large pods, each containing from ten to twelve Peas. Messrs. Barr & Sugden sent three boxes of very fine Cucumbers, including fresh well-grown specimens of Telegraph and Dyer's Champion, a more spiny variety, and rather longer in the specimens shown.

First-class Certificates were awarded to the following novelties:—

Double Pelargonium Jeannie Aligatière (W. Paul).—This is a fine habitated variety of free and vigorous growth, bearing large compact trusses of bright rosy flowers suffused with lilac. It is one of the best and most pleasing varieties of its class, and is well suited for pot culture or for cut flowers.

Pelargonium Zonal Sir Garnet Wolseley (George).—A free growing plant, with large compact trusses of vivid crimson-scarlet flowers.

Weeping Purple Birch (W. Paul).—This is a distinct form of the common Birch, and, like it, has a silvery trunk, while its foliage is of as deep a bronzy-purple as in the Purple Beech. It promises to become one of the very first of ornamental trees, and a worthy companion for the choicest of Conifers, and also for associating with variegated Negundos and other light-tinted ornamental-leaved trees.

✕ *Ixora Fraserii* (Fraser).—A robust variety of vigorous habit and deep glossy foliage, and immense heads of bright orange flowers fully 6 inches across. As a summer-flowering exhibition plant it deserves general culture.

✕ *Campanula Smithii* (Smith).—A pretty dwarf profuse flowering plant, supposed to be a hybrid between *C. Hostii* and *C. pulla*, well adapted for pot culture and general decorative purposes. The flowers are nearly an inch across, erect, and of a beautiful bluish-lilac colour. The slender stems and foliage are densely covered with silky hairs.

Sonerila Hendersonii (Henderson).—A free fine-foliage stove plant, of dwarf growth, and resembling some of the *Bertolonias* in habit; the oblong serrated leaves are 3 to 5 inches in length, deep green, regularly spotted or blotched with silver grey. The under side of the leaves is purple, with darker veins and reticulation.

Sonerila Hendersonii argentea (Henderson).—Similar in habit to the last, of which it is a variety. The grey blotches here run together, and suffuse nearly the whole upper surface of the leaf; very distinct and beautiful.

H.P. Rose Royal Standard (C. Turner).—A fine full flower, densely incurved. It is of a deep rosy-lilac colour, and promises to become a splendid exhibition flower.

HORTICULTURAL SHOW AT CALAIS.

JULY 12TH AND 13TH.

On the occasion of the Calais *fête* the Société d'Agriculture offered prizes for the best culinary vegetables, to be exhibited in the Saloon of the Hotel de Commerce, and the result was a very fair display, containing several features not common in English exhibitions of a similar kind. In the market gardens of St. Pierre, about one league from Calais, and at Cologne, on the road to Guines, where the soil is favourable to vegetable growing, some kinds are grown with eminent success, while others are strikingly inferior to the growths of our own gardens. Potatoes, in the light dry soil between Calais and Guines, and also in another direction between Calais and Dunkerque, on reclaimed land, appear to be

remarkably good, sound, and of large size; an English kind (Kidney), Prince of Wales, was splendid, both in size and quality, some from private gardens being quite remarkable; a very pretty small Kidney, Achille Lemon, purple for half the length and then white, was much admired. Early Cabbages, exhibited by the soldiers of the 8th regiment of the line, were exceedingly fine, and as a table vegetable were delicate; a much larger kind, grown at St. Pierre, by M. Demaission, all of a delicate pale green, even to the external leaves, and received the first prize. A great Cauliflower, Le Normand, quickly grown, and a foot across, crisp and tender, was a beautiful object for a gardener's eye to rest upon; and there were many other kinds equally fine, if not finer, to one of which the first prize was awarded. A great variety of Onions of distinct kinds, some of them very handsome bulbs, were shown. We do not, I think, grow the long purple Onion, Corne de Bœuf, which is much esteemed here, on account of its mild flavour, for soups and similar purposes; a large white kind, as white as snow, was a good deal noticed; and the Oignon de Madere, both flat and round, seemed to be of a good strain; as also a small round kind nearly black, said to be very hardy and early. Several kinds of soup and stew herbs, not grown in England, are great favourites here. A delicate kind of Pea pleased me, it is as small as the seed of Sweet Pea when ripe, and I was informed that it is as sweet as sugar; it is called *Capucine petit*. The ordinary pods of this miniature kind contain, on an average, eight to ten peas. The Carrots made a goodly show of both the long and short kinds, both red and white, principally grown for the table only; a yellow kind was of large size, and received honourable mention. Beet was in great variety, the purple kind being splendidly rich in colour; those with turnip-shaped roots are in much demand for stiff soils. The Kohl Rabi, on the other hand, cannot be favourably spoken of, nor can the Celery, the bundle to which the second prize was awarded being truly wretched. Turnips were well represented, and some of the varieties would, I fancy, be worth importing. The Navet de Taulien is a fine round root; and, among the long kinds, Rose du Palatinat, purple, half way down, and Navet de Meaux, a white kind, still longer in the roots, were remarkable, as well as the Navet Jaune de Hollande. There was Scorzoneria 20 inches long, which is a vegetable we ought to attend to more than we do; boiled in milk it is delicious. There was no Cos Lettuce, which in the neighbourhood of Paris is grown in such perfection; but, of the "Cabbage" kinds, there were the largest specimens I have ever seen. Early fruit was represented; but there was nothing remarkable. Two pot-grown Currant bushes, one white and one red, grown for table decoration, received a first prize. The fruit was the largest I ever saw, and the branches were entirely clothed in such massive clusters that few table ornaments could be imagined of a more attractive and appropriate character. They were grown in square and very tasteful terra cotta pots, which were in themselves ornamental.

A TRAVELLING GARDENER.

THE BIRMINGHAM LAWN MOWER CONTEST.

THE following account of this trial has been kindly furnished us by one of the judges:—The place chosen for this trial was all that could be desired as regards space; but, in consequence of several large flower beds being dotted over it, it could not be staked out in a square workman-like manner. The trial, however, proved quite satisfactory, both to the judges and lookers on. Most of the machines were tried by the judges themselves, and every pains was taken to arrive at a just conclusion; indeed, Mr. Bennett, who was one of the judges, worked every machine entered for competition. The competitors were Messrs. Crowley & Co., Manchester; Messrs. Green & Son, Leeds; Messrs. Hartley & Sugden, Halifax; Mr. Harris, Birmingham; and Messrs. Barnard, Bishop, & Barnard, Norwich. The conditions under which the trial was to be made having been read, the contest commenced about a quarter to twelve o'clock. A 30-inch Green's new mower was first tried, worked by two men, and afterwards with a pony, but it failed to give satisfaction, inasmuch as it ribbed the Grass considerably; a 20-inch machine of the same pattern when tried was not more satisfactory; but the Silens Messor of the same maker proved much better; but all the machines with chain action, more or less, ribbed the Grass. Messrs. Barnard & Bishop tried a 30-inch Ratchet with a pony, which made good work on level ground, but on uneven ground it also ribbed; this machine is very noisy, which certainly is a great drawback to it. Messrs. Hartley & Sugden's new machine, the Windsor, with flexible handles, was next tried, and it did its work tolerably well, but was hard to work. Edwards's Invincible, shown by Messrs. Crowley & Co., proved the easiest to use, and did its work remarkably well, making but little noise, and proved most satisfactory in the trial of various sizes. After a while, the whole of the machines were tried on wet Grass, with the same results in most cases as on dry lawn, the Invincible doing its work well, and throwing the Grass well forward. There is another advantage belonging to this machine, viz., the roller being placed behind the cutter, it is well adapted to cut long Grass. Unfortunately, there was no very long Grass on which to try the machines; but the trial took place on very satisfactory turf, with a close thick bottom. Messrs. Green's machines, having been better set, now cut much better, and proved easy as regards draught. All the makers regulated their own machines, but, in most cases, they were set too low to work easily. After the trial, which lasted four hours and a half, the judges had one of each of the machines taken to pieces, and the special merits claimed by each maker explained. After that, the awards were made as follows, viz., the gold medal to Messrs. Crowley & Co.; the silver medal to Mr. Harris for Green's Silens Messor (chain action); and the bronze medal to Messrs. Hartley & Sugden. After the awards were

made, the winning machine was purchased by one of the judges, and another of the same make was ordered by a second. Though Messrs. Shanks, Follows & Bate, and other well-known mowing machine makers did not compete, they all approved of the verdict which was arrived at. Messrs. Green & Son won the silver medal for a verge cutter.

OBITUARY.

THE LATE HENRY STEPHENS.

THE removal of an honoured veteran, in ripe old age, from the scene of his labours to the "rest that remaineth," need never be an occasion for sorrowful regret. And it is not so much for the purpose of paying his ashes the tribute of "one melodious tear," as for pointing the moral of an earnest man's example to survivors, that we draw attention to the career of usefulness just closed by the author of the "Book of the Farm." Mr. Henry Stephens, who died last week, in his eightieth year, at his residence, near Edinburgh. A Scotchman born and bred, he began life with a determination to devote himself to the theory and practice of agriculture; and it should be a lesson to the lads who look upon farming as a *débutant resort*, when idle half years at school, and fruitless terms at college, result in a conviction that they are good for nothing else, and that the accessories of a farmer's life, the field-sports, the farmer's ordinaries, the riding a good hack, and so forth, are "not so bad fun" after all. Mr. Stephens, as he has lucidly and plainly put it in the preface to his first edition of the "Book of the Farm," published in 1842, won a name in the pursuit to which he dedicated himself in a far more deliberate way. Having received a liberal education at the parochial and grammar schools of Dundee, and subsequently at the Universities of St. Andrews and Edinburgh, he boarded himself with one of the best Berwickshire farmers to acquire an insight into the best farming Scotland could show. Here for three years he pursued an "all-round" course of practical initiation with every species of farm-work, putting himself in the place of ploughman, shepherd, field-labourer, cattleman, and giving attention, at odd times, to the dairy and the poultry-house. Not content with this, he travelled abroad for eighteen months or so, at the close of the Peninsular war, by way of familiarising himself with whatever was in advance of our home system in continental agriculture. On returning to England he made his first and great experiment on what might have seemed a *corpus vile*, a neglected and dilapidated Forfarshire farm of 300 acres; but, what to his thoughtful and already experienced eye bespoke a future triumph over difficulties by dint of industry and perseverance. He straightened his fences, he drained his lands, and trench-ploughed them afterwards; he cultivated his wastes, he introduced improved sheep and cattle farming and housing, and, in short, he made a farm let at £150 a year worth £400. At this farm of Balmadies, a proud monument of determined industry and shrewd sense, he wrought till some forty years ago he migrated to near Edinburgh, and at Redbrae Cottage began the great work which has given him an European, as well as a Transatlantic reputation, such as no other agriculturist has attained in literature. The same thoroughness which characterised his practice, animated the pages in which, from the first elements to the most mature results of farming, he set down the history, system, and methods of successful agriculture. So simply, yet so clearly and ably has he detailed all the processes of British farming, that, although there is nothing to which the average British farmer is so averse as book-learning or pedantry, Stephens's "Book of the Farm" has ever been regarded as a justifiable book of reference, and an exception to the general rule of "unpractical theory," by even the most old-fashioned and anti-bookish farmers. After the first success of this *Opus magnum*, it is not surprising that Mr. Stephens got many openings for collateral treatises on the subject, which he had made his own. In farm-buildings, farm-implements, farm-physiology, his authority associated him as a joint editor with others; and his "Manual of Practical Draining and Catechism of Practical Agriculture," as well as his "Essay on Yester Deep Land Culture" (1855) enhanced the reputation already acquired. But the most remarkable proof of Mr. Stephens's devotion to his favourite study was given in the last years of his life, when as late as 1871 he published a new edition of the "Book of the Farm," not simply revised and re-arranged, but actually recast and written, in order to bring up its contents to the latest developments of practical agriculture. Those who have compared the first edition with the last, as we have ourselves done, may well express amazement at the industry, candour, and receptivity of the old man, who could so keep himself *au courant* with the new improvement, which old age is apt to designate new-broomist, as to record seriatim the points of advance in each, and to weigh the merits of the old with the new, with all the impartiality of a judge. In his private life, Mr. Stephens was as simple and unpretending as he was genuine in his literary character. Honoured in public and in private, he was not set above himself by compliments or distinctions, but exhibited all the humble-mindedness of a real disciple of learning. He was hospitable and genial in his own quiet way, and enjoyed an occasional visit to his literary friends in the "modern Athens." Like all men of the same fibre and calibre, he had a keen interest in the events of the day—the new books, the current politics. One reads the same of the great James Watt, whose great intellect could embrace the common road of contemporary events, at the same time that it was grappling with the most abstruse problems of science. Long may it be ere this type of mankind fails before the coming-in of a more superficial system of study and acquirements. Long may Henry Stephens's example live with his "Book of the Farm."

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

THE SEASON AND OUR GARDENS.

THE proverbial vicissitudes of the weather in our fickle climate have, perhaps, never been more fully exemplified than during the present season, so far as great fluctuations between heat and cold, accompanied by excessive dryness, are concerned. Commencing with last autumn, it is not once in a quarter of a century that such a season for outdoor work occurs; all through the winter there was scarcely a day spoiled through frost, rain, or snow. Planting, whether associated with new work or alterations, went on uninterruptedly; through the absence of chilling rains or snow the ground never got so cold as usual, root-action scarcely being suspended. By the end of February and beginning of March, the continued dry weather, began to tell upon the water-supply, many wells being pumped dry daily, that had never been known to fail before, not even in the driest summers. The extremely mild winter, as might be supposed, brought fruit-trees early into bloom; yet, not so early as on some previous seasons. On the nights of the 9th, 10th, 11th, 12th, and 13th of March, we had respectively, 11°, 14°, 17°, 14°, and 7° of frost. Peaches, Apricots, and Nectarines, were in full bloom, and yet where protected with ordinary canvas covering the trees set a full crop, a circumstance which may be accounted for through two causes. First, the extraordinary dry state of the soil by which the sap in circulation was reduced to a minimum. Second, the concurrent dry state of the atmosphere; but I rather think that the dryness of the soil was the primary cause of their escape. During the last weeks of April we had a change to almost tropical weather, the thermometer in the shade reaching, as near as possible, to 80°, but this was of short duration. May brought us a return of cold unseasonable weather until near the end of the month, when we had it warmer, but throughout the month, as in April, there was an extraordinary absence of rain; the land, consequently, got very dry, all kitchen-garden crops being late and unpromising, except where more than ordinary means had been taken to assist them, or in exceptionally favoured spots. Deciduous timber trees were late in leafing, and their leaves uncommonly small in size, consequent not only upon the ungenial spring, but also upon the extremely dry state of the soil. June was characterised by alternste heat and cold, the thermometer ranging from 82° in the day down to freezing on several nights; this, as might be expected, had anything but a favourable effect upon tender things, such as Tomatoes, French Beans, and bedding plants. Roses in most places have been poor, their first growths having been cut off, and the second, as is usual in such cases, being weak. Thunder-showers were experienced in some parts of the country, but, on the whole, the amount of rainfall was exceedingly small. July brought us very hot weather, accompanied by thunder-storms, in some parts, and rain which was very partial—in some places abundant, in others little or none. We occasionally hear of gardeners who say they have discontinued watering kitchen-garden crops, depending on a liberal use of manure and deep culture to carry them through a dry season. In some unusually favourable localities, with a rich deep unctious loam resting on a naturally damp sub-soil, water may be dispensed with, but, in far the greater number of gardens, unless watering is resorted to in seasons like this, or even when the soil is not so dry as at present, it is vain to look for vegetables in either quantity or in condition fit to send to table, no matter how well the land is either prepared or cropped. In most places thoroughly good soakings, accompanied by mulchings, so as to prevent loss by evaporation, are necessary in very dry seasons, or the results are Peas all coming in together, and as hard as bullets before they are half grown, the late crops becoming a mass of white mildew, and not calculated to produce a single dish

when the season for which they were sown arrives; Cauli-flowers buttoning; Lettuce running to seed; and Celery bolting. This is precisely the condition in which many gardens are at present, where everything has been done in the preparation of the land and treatment of the crop that skill and attention could devise, except the application of water, which is not given for the best of all reasons, there being none to give. Wells, pumps, and cisterns having failed, every drop of water that is used has to be carted—in many places—a considerable distance. Such weather has not been favourable for the development and spread of the Potato fungus; consequently we have all but escaped the disease so far; but the excessively dry condition of the soil has, in many places, prematurely stopped the growth of the tubers, the eyes of which are just beginning to start, and as soon as we get rain in sufficient quantities to excite growth they will push a second crop, the effect of which will be to spoil their quality—this second produce being small and of little value. Where this state of matters exists, as soon as rain comes, and before they have had time to push this second growth, it is best to take up the crop, for, although they are not so good in quality or equal in weight to what they would have been if not checked in their growth, they will be better than if allowed to remain. Trees, such as Horse Chestnut, Elm, Lime, and Plane, are fast shedding their leaves as badly as Elms and Limes do in August, when much affected with red spider. Such seasons as the present show, in a marked degree, the mistake of allowing old trees to remain in too close proximity to each other, even in positions where it appears almost sacrilege to touch them. Wherever they happen to stand so close that the land cannot support them, particularly in respect to moisture at the roots, the result often is death. According to the laws of natural selection, the weakest perish, frequently leaving the survivors fatally injured in the death struggle; such seasons also point to the timely thinning of young trees, more especially such as stand in prominent positions before they get injured through insufficiency of food, consequent upon their being too closely planted. There are hundreds of bare unsightly spots in our parks, or grounds occupied by some newly-planted striplings, which have no chance of ever attaining the goodly proportions of the old trees they have supplanted. The latter might have weathered many a storm if the ground they occupied had not been exhausted by the continuous drain of too many roots. Old trees are like old animals: they have not the vigour of youth to sustain them in a life and death struggle; consequently, should never be allowed to stand too thickly. One living tree in such situations is vastly preferable to two dead ones. The weather too, has had the effect on insect life usual in such seasons. The hot days in April brought out wasps in this neighbourhood in large quantities. Such numbers then made their appearance as I do not recollect seeing so early in any previous season; but the recurrence of unseasonable cold evidently destroyed them, for, after the middle of May we scarcely saw one until within the last few days, when some have made their appearance. To some extent the same thing occurred with aphides. Through the mild winter they escaped destruction on Roses on walls and in similarly sheltered situations; the unusual heat of the few days in April brought to life quantities that were destroyed by the low temperature afterwards. Bad as the season has been for gardens, it might, nevertheless, have been worse for the country at large. Englishmen are proverbial grumblers at the weather. All through the spring we were lamenting the absence of rain, wherein, if the season had been wet instead of exceptionally dry, the earth temperature would have been so low that, combined with the low temperature of the air, it would have exercised a most damaging influence on vegetation, more especially upon that all-important crop—Wheat—which, instead of being as it is (exceptionally good), would have been a most serious failure. The way in which grain crops kept their colour, and went on growing through the unusually prolonged cold, was a subject of general remark, and an evidence of the mitigatory influence which a dry condition of the soil exercises over an ungenial state of the air.

T. BAINES.

Southgate.

NOTES OF THE WEEK.

— MR. J. T. BOSWELL SYME sends us, from his garden in Fife-shire, a healthy and vigorous branch in flower of a *Eucalyptus* which he thinks is *E. cordata*, and not *E. globulus* as stated last week (see p. 42). The leaves are bluntly heart-shaped, and rather closely set on the branches. Their colour is similar to that of the leaves of *E. globulus* and they are equally aromatic.

— *ABELIA FLORIBUNDA*, Mr. Charles Moore informs us, is now in fine flower at Glasnevin. It grows in the open air nailed against one of the houses and is very beautiful, its long purplish-red tubular blossoms being produced from the axils of the leaves at the ends of the branches in great profusion. It succeeds, we believe, out-of-doors in Devonshire, and in some of the other warmer counties in England.

— We are pleased to be able to state that Lord and Lady Holmesdale have granted permission for the beautiful grounds at Linton Park to be open to visitors on Tuesday and Friday afternoons, from two to six o'clock, until further notice. A book will be kept in the conservatory, in which visitors will be invited to enter their names.

— We learn, from the *Cultivator*, that many interesting facts were stated by members of the Michigan Pomological Society, from different parts of that State, showing the difference between the cold of low places, and the warmer temperature on hills and elevations, during the intense cold of winter—a difference of a hundred feet or two in height often making a difference of eight or ten degrees in temperature. Peaches were often found killed in low, warm places, while the trees bore plentiful crops on the hills above. This principle has been long well understood, but the additional corroborative evidence is interesting.

— PROF. BEAL lately gave an interesting address, with enlarged illustrations, on several characteristics which might be employed in describing fruits, which pomologists had overlooked. Among these was a dissimilarity in the form or aggregation of the styles in the flowers of some different sorts, but the most remarkable character which he pointed out was the peculiarity in the shape and markings of the petals of Apples, some being ovate, others round, cordate, &c., and so far as he had examined, these characteristics were constant or uniform. The only drawback for general utility is that they must be examined at a time when the fruit itself cannot be seen.

— In reference to Chelsea Bridge and Battersea Park Sir C. Dilke asked the First Commissioner of Works, the other night, whether the subject of freeing from toll the government bridge leading to Battersea Park was under the consideration of the Office of Works, and whether the promise of that office to plant the vacant space on the west side of Battersea Park was to be carried out. Lord H. Lennox said the question of freeing Chelsea Bridge from toll was a difficult one, but he had hopes that the difficulty would not prove insuperable. With regard to the second part of the question, he said if Sir C. Dilke turns to the Estimates of this year, he will find that he had caused provision to be made in the Vote for Parks, &c., for the present year for forming and planting the empty space of ground on the west boundary of Battersea Park between the gymnasium and the west lodge. The work is in hand as far as the formation of the ground is concerned, and the planting will be commenced in the autumn.

— A COMPANY under the title of the Royal Aquarium and Summer and Winter Garden Society has been started, the object of which is to provide London with an aquarium and winter garden, and in connection therewith to afford facilities generally for the promotion of artistic, scientific, and musical entertainments. A site has been procured facing the Houses of Parliament and Westminster Abbey, and lying between the new Government offices and Victoria Street. The centre or main transepts of the building will be constructed principally of glass, forming a large conservatory and promenade surrounded by galleries. Special concerts (vocal and instrumental) will be held every Saturday, at which the most eminent and favourite artists will appear. Performances of an attractive and varied character will also take place on stated days; at Christmas an entertainment will be provided specially acceptable to children and families. The aquarium, says the prospectus, will be a special feature, being the first of its kind established in London; and no pains will be spared to render it at once the most complete and instructive aquarium in the world; the experience already gained in the construction and management of the Brighton, Crystal Palace, and Manchester aquaria will be fully utilised, and prove highly advantageous in the completion of the present enterprise. It may be specially noted that the marine aquarium has of late years proved one of the most attractive places of resort for all classes of society. In connection with the main building there will be rooms for private concerts and for the delivery of popular lectures on matters pertaining to science and art, and other subjects of public

interest. The hall will be so arranged that artistic, literary, and private societies can engage it for the purposes of meetings, conversaciones, &c.

— We have received the official circular, relating to Mr. Gibson's testimonial, from the secretary, and have given it publicity in another column in the hope that it may receive the attention which it deserves.

— At the Lincolnshire County show, held this week at Grantham, Messrs. Carter's exhibition of seeds and roots formed a prominent feature, especially the display of Grass seeds and Grasses, a department to which much attention is evidently paid. They are shown in sets suitable for all kinds of soils and climate.

— THE operation of laying out the new park for Sheffield, given to that town by Mr. Mark Firth, of Oakbrook, has been commenced. The park is 36½ acres in extent, and commands one of the finest views to be had of the surrounding country. It is about two miles from Sheffield, and is near a densely populated part of that town.

— MR. JARLOR, the superintendent of street plantations in Paris, informs us that the Planes which we have been accustomed to admire in Paris, are beginning to suffer and to die. As soon as the roots get through the prepared soil, and touch the dry chalky Paris soil, they cease to thrive. On a recent visit to London, he was amazed at the size and beauty of the Planes and other deciduous trees in the west-central squares, and in other parts of London.

— *DISA GRANDIFLORA*, when well grown and flowered, amply repays all the trouble required for its successful cultivation. We saw, last week, at Sir William Marriott's garden, Down House, Dorset, some plants grown by his gardener (Mr. Hill) of this beautiful Orchid with more than eighty flowers in bloom at once. In one pan we counted more than thirty flowers of a most brilliantly coloured variety of *D. grandiflora*, named *superba*. Some of the varieties were originally given to Sir William Marriott, by Mr. Leach, of Clapham, whose skill in cultivating *D. grandiflora* is well known.

— WEST HAM PARK was opened on Monday last by the Mayor and Sheriffs of London. It has been partly the gift of Mr. Gurney, partly of the Corporation of the City, and some of the expense has been raised by voluntary contributions. Altogether it is a magnificent gift of 80 acres of beautifully timbered land in the centre of a district which needs it sadly. In all, it is about some 5 acres larger than St. James's Park; and, though it lacks ornamental water, it makes up for that in the beauty of its Grass and trees. The whole formal ceremony of opening was a great success, and passed off with the greatest enthusiasm.

— ON Thursday last a flower show was held in the Drapers' Company's garden, Throgmorton Street, at which numerous prizes were awarded for window-plants grown within the precincts of the City. The plants exhibited consisted of *Aucubas*, *Ivy*, *Zonal Pelargoniums*, *Musk*, the *Spotted* and *old Scarlet Monkey-flower* (*Mimulus*), *Creeping Jenny*, *Ferns*—such as *Lastrea*, *Scolopendrium*, and *Adiantum*. A plant of the *Canary Creeper* (*Tropæolum peregrinum*), came from St. Paul's Cathedral, and there were numerous examples of the fresh green *Ornithogalum*, an Onion-like bulb so often seen in cottager's windows in all parts both of town and country. The show was a very interesting one, and the plants staged good, considering the smoke and dust amid which they were grown. Mr. Marshall, of Enfield, sent a collection of choice Orchids and stove and greenhouse foliaged plants; while Messrs. W. Paul, C. Turner, and G. Paul & Sons, furnished admirable stands of cut Roses. The gardens are about an acre in extent (not several acres as stated at p. 20), and contain some fine old specimen Mulberry trees. In a large oval tank here, the white Water Lily grows luxuriantly, and the American water weed (*Anacharis*) is just now flowering very profusely.

— FINE specimens of Rhode Island Greenings were exhibited at a meeting of the Michigan Pomological Society, held on the 24th ult., as fresh and plump as in autumn, grown at South Haven, by President Phillips of the South Haven Horticultural Society. These Apples were packed in barrels with each specimen wrapped in paper, and headed up, and were kept in a cellar with a temperature near the freezing point through the winter. Handsome Apples thus packed brought 50 per cent. more in the market than those packed in the common way. Judge Ramsdell, of Traverse City, presented bright and fine specimens of several sorts grown at that place. Among them was the *Fameuse*, which appeared as fresh as in autumn. Specimens of the *Golden Russet* (of Western New-York) and *Northern Spy* were also in excellent condition, as well as *Wagener* and *Baldwin*. The Grand Traverse region is about 45° north, where Apples do not ripen till late in the season, and all sorts keep well. No warm weather occurs after the ripening season—a most important advantage. That region is nearly surrounded by the open waters of Lake Huron and Lake Michigan, and there is no difficulty in keeping Apples as low as 30° all winter.

THE INDOOR GARDEN.

LADY'S-SLIPPERS.

II.—Tender Cyripediums.

C. venustum (Handsome Lady's-slipper).—This is an old and well-known plant, with handsome foliage and rather showy green and purple flowers, which are copiously produced during the autumn and winter months. The flowers are nearly as large as those of the Bearded Lady's-slipper, but different in the foliage; and the lip is bronzy-green, not deep purple, as in the last-named plant. Close examination of the leaves shows them to be covered with a superposed layer of air-cells, and these give to the foliage a rather glaucous tint. It appears to like a tolerable degree of warmth; but I have seen creditable plants grown under ordinary greenhouse treatment. The sepals are white, or pale green, striped with darker lines at the base; and the spreading petals are olive-green at the base, having purple apices. They are fringed by rather long black hairs, and have a few black spots over their surface. It is an easily-grown plant, that should be in every collection of greenhouse or stove exotics. It is a native of the East Indies.—*C. venustum* Wall. Hook. Ex. Flora 35; Lod. Bot. Cab. 585; Bot. Reg. 10, 788; Bot. Mag. 47, 2,129.

C. venustum var. *spectabile* is a very distinct and bright coloured form, although very rare. There is an excellent coloured figure in the second volume of Warner's Select Orchidaceous Plants, t. 24.

C. pardinum is a distinct variety of this plant, characterised by its broader foliage, having paler blotches of purple behind, and in the toe of the slipper being peculiarly obtuse or blunt. It often bears two, and more rarely three, flowers on a scape, the colours being similar to those of the normal form. It is figured in Floral Mag. 1874.

C. concolor (Self-coloured Lady's-slipper).—This is a small, but very distinct and interesting species. The flowers, which are of a clear sulphur-yellow throughout, sparingly dotted with brown, are borne on one or two flowered scapes from 2 to 5 inches in height, the flowers themselves being 2 or 3 inches across. It grows best in a warm moist stove or East Indian house, planted in a shallow pan of fibrous peat and lumps of sand or limestone rock. It flowers nearly continually when well grown, and requires plenty of moisture during the summer months. In winter, water very carefully, as it is inclined to rot off at the crown. The plant was discovered by the Rev. C. Parish on lime-stone rocks in Burmah. It is also a native of Moulmein, where, according to Colonel Benson, it is found on the exposed face of limestone rocks, under a burning sun for a considerable portion of the year.—*C. concolor*, Parish, M.S.; Bateman in Bot. Mag. t. 5,513; Gard. Chron. 1865, p. 626, with an excellent wood-cut fig; Batm. 2d Cent. Or. Pl. t. 153.

C. niveum (Snow-white Lady's-slipper).—This is a little gem, and a general favourite wherever it is grown. In habit, it is so near the last, that Mr. Ellis, who obtained many of the first plants introduced, mistook it for *C. concolor* until it flowered. The foliage is, however, a little longer, and rather deeper in colour; the flowers are borne on one or two-flowered scapes, which vary from 3 to 6 inches in height, sometimes even higher; the sepals are white in front, suffused with delicate rose-flesh at the base, which gives them a charming opaline appearance, and at the back they are suffused with green, and blotched with dull purple; the sepals are pure white, nearly 2 inches long, and are dotted at the base with purple; lip, oblong, slightly pointed, not unlike a wren's egg, but larger, pure white, with minute purple dots. Like the last, it luxuriates best in a warm moist atmosphere, and thorough drainage at the root. Different individuals of this pretty little plant vary considerably in the form of the lip, some having the lip tapering and bluntly pointed, as in *C. concolor*; while others have it rounded, something like *C. Schlimmi*. It so nearly resembles *C. concolor* in all its parts, that I am inclined to think it is best considered as but a white form of that species.—*C. niveum* Rchb. f. in Gard. Chron. 1869, p. 1,038; *C. concolor* var. *niveum* Rchb. f. in litt.; Floral Mag. 1871, 543; Jennings's Orch. t. 28.

C. javanicum.—This is a very inconspicuous species of the *C. barbatum* type, having variegated foliage and solitary dingy green and purple flowers on a long slender purplish scape. It grows well treated like *C. barbatum*, and flowers during the winter months; its flowers, like all the others in this group, being very permanent in character. Although not showy, the plant is worth adding to a collection of these plants for variety. It is a native of Java and other islands in the Indian Archipelago.—*C. javanicum*, Reinw.; Flore des Serres, 7, 703.

C. barbatum (Bearded Lady's Slipper).—This is one of the best known and most generally cultivated of all the species. It is a most vigorous and free-flowering plant that may be had in bloom all throughout the year with but little trouble. The foliage is of a pleasing green colour, with darker blotches and lines, the flowers

being borne on long deep purple or chocolate-tinted scapes, 6 to 15 inches in height. The upper sepal is fully expanded, clear white at the apex, its lower half being striped with deep purple and bright green. The petals are spreading, and are of a bright purplish-tint, ciliated along their edges, and characterised by bright, hairy, black glands along their upper margins. The lip is quite an inch in width in good varieties and of a deep claret-purple, with deeper veins. This is one of the most variable plants in the whole group, the typical form being somewhat caulescent in character, with very small and poorly-coloured flowers. The best known variety in cultivation, and one of the most popular for show purposes, is *C. barbatum nigrum*, or, as it is sometimes called *superbum*. Another form, which bears two flowers on a scape, is named *C. barbatum biflorum*. *C. Crossii* is another very distinct form and rather rare. Strictly speaking, *C. Veitchii* (*superbiens*) and *C. Dayii* may be referred to this species, and all the numerous forms are easily recognised by the peculiar marginal glands on the petals, and the shape of the green staminode. The plant, being robust, readily adapts itself to very diverse modes of treatment. It grows well in turfy loam, peat, and dried cow-dung in shallow pans or pots, and, when well grown, makes a fine exhibition plant. For the latter purpose, it is a usual practice to grow the plants in small pots, and arrange those that bloom best in a large pan when in flower. Grouped in this way, and neatly surfaced with fresh moss, they have a fine effect in the eyes of ordinary floral critics, although they look stiff and formal to the artist. The plant is a native of Mount Ophir, a locality very interesting, as being the habitat of a beautiful, but, as yet, unintroducted Fern (*Mattonia pectinata*).—*C. barbatum* Lindl. Bot. Reg. 28, 17; Bot. Mag. 72, 4,234; Flor. de Serres, 3, 190. For fig. of *C. barbatum* v. *Crossii*, see La Belgique Hort., 1865, Nos. 8 and 9.

C. argus (Eye-like Spotted Lady's-slipper).—In habit this plant resembles *C. barbatum*, but the flowers are borne on taller scapes, the latter varying from 12 to 18 inches in height. The flowers are about the same size as in *C. barbatum*; sepals, white, streaked with green lines, as in *C. venustum*; petals, curved, as in *C. Fairieanum* and $\times$ *C. vexillarium*, oblong, marked with green lines, and profusely spotted or blotched with deep purple eye-like markings; each petal has about seven large shining hairy glands along its upper margin, a character which shows its close relation to the bearded Lady-slipper in a marked degree. The blunt apices of the petals are suffused with purple as in *C. venustum*. Lip like that of *C. barbatum* in form, but veined with green on a bronze-coloured ground, as in *C. venustum*. It is a distinct and handsome plant, growing and flowering very freely in the winter and spring treated like its congeners. It was introduced by Messrs. Veitch, and first exhibited in December, 1873. It is a native of the Philippines, and may be a natural hybrid. Mr. Bateman suggests that *C. barbatum* and *C. venustum* are the parents, and in this opinion I fully agree. I believe it is not yet figured.—*C. argus* Rchb. f. in Gard. Chron., 1873, p. 608.

C. purpuratum.—This, at first sight, so closely resembles *C. barbatum*, both in habit and flower, that it is not unfrequently so named in gardens and nurseries. It is, however, very distinct, and characterised by the absence of marginal hairy glands, and by having the margins of the acute dorsal sepal or standard very distinctly revolute. It is an old species, seldom seen in modern collections, although I have noted it flowering annually in the Kew collection for several successive years. It blooms during the winter months, and lasts for fully a month or six weeks in perfection. It sometimes, though rarely, bears two flowers on a scape.—Lind. Bot. Reg. 23, 1,991; Wight Ic. Pl. Ind. or. 5, 1,780; Bot. Mag., t. 4,901.

C. Hookeria (Lady Hooker's Lady's-slipper).—This, although not remarkable for the beauty of its flowers, is a handsome plant, well worth growing as a foliage plant, its broad green foliage being conspicuously marked with silvery grey. Each leaf is from 4 to 6 inches long by about 2½ inches in width. The flowers are borne singly on scapes 12 to 16 inches in length; sepals, ovate, of a greenish-yellow colour; petals, 2 or 3 inches long; spatulate, green at the base, and of a lively purple colour at their apices, the petals are spotted with purple or brown about the centre; lip, more or less swollen, of a greenish-purple colour; staminode, oblong, greenish. This is the best of all the variegated kinds, and good varieties bear really handsome flowers, while others are very dingy. *C. Bullenii* is a variety of this plant. Like all the other tropical species, it likes plenty of subdued light and a warm moist atmosphere. This species and *C. Fairieanum* are subject to the attacks of thrips and red spider if irregularly treated, and these soon spoil their beauty and give them an unseemly rusty appearance. Genial warmth, fresh air, and moisture will do much to keep these pests in abeyance, especially if the syringe is freely used at the same time. It is a native of Borneo and the Malayan Archipelago.—Hook. Bot. Mag., t. 5,362; Batm. 2d. Cent. Orch. Pl. t. 123; Fl. des Serres, 15, 1,565.

C. superbians (Superb Lady's-slipper), although nothing more than a fine form of the Bearded Lady's-slipper, this is, at the same time, so distinct and beautiful that for all garden purposes it merits a distinct title. The plant is easily recognised, even when not in flower, by its bright yellowish-green darkly-blotched foliage. Its flowers are large and solitary, borne on stout scapes, 12 to 14 inches high. The upper sepal is broadly egg-shaped, of a greenish shade at the base, softening into white at the tip, and streaked with deep green convergent lines. Petals 3 to 3½ inches long, nearly an inch broad, strap-shaped, rather blunt at their points, and deflexed at an angle of about 45°. The petals are white, shading into green at the base, the apices being tinted with rose. The petals are spotted throughout with deep purple, something in the way of *C. argus*; but here the markings are smaller and the segments larger. The lip is large, inflated at the mouth, tapering in graceful curves to a blunt point, being of a dull purplish brown colour, veined with green at the sides. The stamina is innulate, with a tooth on each side below. It likes a very warm humid atmosphere, and a fresh open compost, and appears to grow nearly all the year, so that it should not want for moisture at any time. It is a native of Java, often called *C. Veitchii* in gardens.—Rchb. f. in Bonplandia, 1855, 227; Xenia Orch. ii. 9, t. 103; Warner Select. Orch. Ser. 2, t. 12; L. Ill. Hort. 12, 429.

C. Dayanun (Mr. John Day's Lady's-slipper).—This is another fine and distinct form of the ubiquitous *C. barbatum*, and as one of the most effective of its class, should find a place in the most select collection. In form, the flower reminds one of *C. superbians*, but it is easily distinguished from that form by the dorsal sepal being narrower and more sharply pointed; the petals are longer and more spreading, and are not spotted. The upper segment is ovate, pale yellowish-white, streaked with green; petals 3 to 4 inches in length, white at the tips, pale green at the base, streaked with interrupted brownish purple lines. Lips very large and wide at the mouth, gradually curving to a bluntnish point as in *C. superbians*, the colour being purplish-brown, margined with a shade of green. Foliage, light green, blotched irregularly with a darker shade. It has a tolerably free habit, and requires a warm fresh humid atmosphere, with a copious supply of tepid moisture at the root. Flowered first about 1860. It is a native of Borneo and the Malayan Archipelago. Although described as *C. spectabile*, it must not be confounded with the hardy North American species of that name.—*C. spectabile*, Rchb. in Allq. Gart. Zeit., Oct. 11, 1856, var. Dayii; *C. spectabile*, Gard. Chron. 1860, p. 695; Flor. de Serres, figured in as *C. Dayii*.

C. insigne (Bannered Lady's-slipper).—This is one of the oldest and best of all the species, and one that grows well with the same care as is requisite to succeed with a *Fuchsia* or *Geranium*. It is one of the best and most suitable of all greenhouse Orchids, for it must be badly treated, indeed, if it refuses to grow and bloom. It likes a compost of fibrous loam and well-dried cowdung on a well-drained bottom, with plenty of water at the foot when growing; blooming, as it does in the winter, makes this doubly valuable. A very fine variety of this plant, with brighter-coloured flowers and more white on the upper sepal, is called *Maulei*. A good figure of this variety will be found in *Flore des Serres* 15, 1,564. As an Orchid for room or window-culture in a Wardian case, this has no equal, as it is perfectly safe if preserved from actual frost, although the nearer the winter temperature is kept at 40° Far. the better. It should never be allowed to become thoroughly dry at the root, though less moisture is desirable during dull or cold weather, or the plant may suffer from damp. In the *Gardeners' Chronicle*, 1842, p. 253, a correspondent recommends this as a drawing-room decorative plant, when in flower, and says:—"On the 1st of December I placed eight plants in the drawing-room; there they revelled in the greatest luxuriance for three successive months, and, when taken out in March, were as fresh and vigorous as the day they were put in."—Wall. Hook. Ex. Fl. 34; Lodd. Cab. 1,321; Bot. Mag., 62, 3,412. The figure under this name in Bl. Bumph., 195, is *C. glanduliferum* of the same author. *C. insigne* Veitchianum.—This is a still finer variety than *C. Maulei*, the upper sepal being large and white nearly to the base, profusely blotched with crimson. A plant of this was sold in the Meadowbank collection for over twenty guineas. I believe it is not yet figured.

C. villosum (Shaggy Lady's-slipper).—One of the finest and most luxuriant of all the species, which grows equally well either in a hot stove or in a cool Orchid-house. Coming from the hot climate of Moulmein, one would expect a high temperature was essential to its well-being; but such is not the case—indeed, the plants seem fresher and more vigorous when grown in a cool, moist, airy temperature than when coddled up in the East Indian-house. The foliage is of a fresh green colour, the base behind being profusely speckled with purple; flowers, solitary, on stout hairy scapes, 6 to 2 inches in height; sepals, oblong, greenish, shaded and streaked with brown towards the base; the spatulate petals are of a bright brown tint,

shining as if varnished; the lip is of a pale yellow tint, shaded with purplish brown, and shining like the petals; the oblong staminode is honey-coloured, slightly tinged with green, having a blunt tooth or a projecting tubercle in the centre; well-grown specimens bear twenty to thirty flowers, and last six weeks in perfection. This is one of the best species an amateur can add to his collection, as it seldom fails to please. A native of India-Moulmein, where it was found by Mr. T. Lobb, one of the most successful of the Veitchian collectors, at an elevation of 5,000 feet.—Lindl. in Gard. Chron. 1854, p. 135.

C. hirsutissimum (Hairy Lady's-slipper).—A free-growing plant, bearing large fully-expanded flowers on scapes shorter than the leaves. Although not particularly showy, it deserves culture as a variety, especially as it blooms freely at the dull season of the year, when flowers of any kind are valuable; flowers, solitary, the sepals being green, shaded with dull brown, the petals having undulated margins, and a partial twist near their apices, green at the base, profusely dotted with brown, and of a bright purple tint at the apex; lip, green, very profusely spotted with brown. This species was first published by Hooker in the *Botanical Magazine*, from Lindley's manuscripts, and the plant first flowered in English collections about 1858. Lindley remarks that it is allied to *C. insigne*, *villosum*, *Lewii*, and *barbatum*, which species he thus distinguishes from each other:—"C. insigne is only tomentose, and its petals want the spatulate form, long hairs, and strong undulation. C. villosum has longer flowers, no undulation, or beard, or ciliation of the petals, and has the sterile stamen truncate, not quadrate. Of C. Lewii, the long flat naked petals are quite different. C. barbatum has a circular, not quadrate, sterile stamen, spotted short leaves, and wants the shagginess. In C. purpuratum the sterile stamen is lunate." The plant is a native of Assam.—Lindl. Bot. Mag. t. 4,990; Warner's Select Orch. Pl., 1st ser., t. 15; Batm. 2nd Cent. Orch. Pl., t. 149.

C. Fairieanum (Mr. Fairie's Lady's-slipper).—One of the rarest and most distinct plants in the group, easily recognised when in bloom by the rich purple markings on its dorsal sepal, and by the curious double curve assumed by the petals. The plant is rather small in habit, having pale greenish leaves that spread horizontally over the top of the shallow pan in which it should be grown. It is rather delicate, and likes a warm partially shaded position in the East Indian-house or plant stove, with a fresh open sandy compost thoroughly well drained. The flowers are solitary on slender scapes, the upper sepal being large in proportion to the other segments, the margins being undulate and pilose or ciliate, while at the apex striped with rich purple or claret markings. The lower sepal is greenish-white and much smaller; petals, curved downwards, green striped with purple, margined with purple hairs. The plant was first described by Lindley from a specimen which first bloomed with Mr. Fairie, of Liverpool, in 1857. The plant was first imported from Assam; and, although many consignments have been received, it continues very rare. It blooms in the autumn and lasts well.—Hook. in Bot. Mag., t. 5,024; Gard. Chron., 1857, p. 704; Batm. 2nd Cent. Orch. Pl., t. 140.

C. Lowii (Mr. Hugh Low's Lady's-slipper).—This is a strong-growing vigorous-habited species, introduced in 1846, and was described soon after from a specimen which bloomed in the collection of A. Kenrich, Esq., of West Bromwich. It is a native of Borneo, where it is found growing on the branches of some of the highest forest trees. I have seen some finely-grown plants in the garden of Provost Russel, of Mayfield, near Falkirk, N.B., who has one of the best and most complete collections of these curious and beautiful plants that I have ever seen. One of these plants bore six flowers on a fine scape nearly 4 feet long. The foliage is about 12 to 14 inches long, and 1½ inches in width, of a dark green colour, the erect scape being usually about 2 feet high and three to four flowered. The upper sepal is downy at the back and pale green within. The petals are 3 to 4 inches long, projected nearly horizontally at right angles with the lip. These are spatulate in form, yellowish-green at the base, heavily spotted or blotched with purple, the apices being of a dullish purple tint; the lip is oblong, blunt at the apex, of a shining purplish-brown colour; the staminode is curiously three-lobed below. This plant, although a native of one of the hottest and most universally humid districts in the world, grows perfectly well in a moderately cool Cattleya-house. They grow best in a fresh open turfy compost surfaced with living *Sphagnum* Moss, into which its thick hairy roots branch in all directions. This plant is more rarely known as *C. cruciforme*. It is a native of Borneo.—*Flore des Serres* 4, 375; Jour. Hort. Soc. 5, 27; Lind. in Gard. Chron., 1847, p. 765, with wood-cut fig.

C. Schlummi (Schlimm's Lady's-slipper).—This is a charming little plant when well grown, yet growers, as a rule, fail in its cultivation. I have only seen two plants in a really first-class condition, one in Provost Russel's well-known collection at Falkirk, and the other in Mr. Edwin Wrigley's garden at Bury, Lancashire. The last mentioned specimen had leaves 12 to 16 inches in length and nearly

2 inches broad, being of a fresh light green colour, and in the most vigorous health. It was growing with *Odontoglossa*, *Disas*, and *Oncidium macranthum*, in a cool moist house, and was literally revelling in a fresh open compost of turfy loam and fibrous peat, surfaced with living *Sphagnum Moss*. It bears pretty little flowers 1 to 2 inches across, on erect simple, or more rarely branched, spikes. The sepals are oblong, slightly downy, and greenish white; petals, oval or oblong, pure white, sometimes sparingly spotted with bright purple; lip, rounded, white, suffused with bright rose. The flowers are not unlike those of the North American *C. spectabile* in shape and colour, but smaller. It is very liable to the attacks of thrips, which seem especially fond of its fresh succulent young leaves; a cool atmosphere, regular supplies of moisture at the root, together with daily syringings, and a shady position in the house, will do much to prevent their ravages. It is a chaste little species well worth culture. It is a native of New Grenada, and flowered with Mr. Bull about 1866. — *Bot. Mag.*, t. 5,614

C. caudatum (Long-tailed *Cypripede*).—This is one of the most attractive of Orchids, and, at the same time, one of the greatest curiosities of the vegetable kingdom. The foliage is strap-shaped, 5 to 10 inches in length by about 1 inch wide, and of a bright green colour. The spike is two or three flowered, and is a little longer than the leaves. The flowers are large and handsome; sepals, ovate-alternate, the lower one rather larger than the upper one, 3 or 4 inches in length, and of a pale yellowish colour, streaked with deep green markings, and sometimes tinged with rose. The lip is large and very much swollen, yellowish outside, heavily suffused with greenish-purple. The colouring is very rich in the best forms. The inflected lobes at the base are of ivory whiteness, spotted with rich purple markings. The petals are the most striking parts of the flower and are remarkable not only for their great length, but for the gradual manner in which they elongate until the maximum length of from 20 to 30 inches is attained. When the buds first open these petals are not much longer than the sepals, but they continue to increase in length, for nine or ten days at least, after the flower opens. It would be interesting to know the cause of their rapid growth, while, at the same time, the rest of the flower does not visibly enlarge; it is, however, a peculiarity evinced, more or less, by all the long-petalled *Cypripedes* and by one or two *Brassias*. Another case, nearly similar, is found in the tail or spur of *Angraecum sesquipedale*, which frequently attains the length of from 12 to 16 inches. It was pointed out by Darwin, in his "Fertilisation of Orchids," that in its native habitat (Madagascar) there probably existed a lepidopterous insect with a proboscis sufficiently long to reach the nectar, which is secreted at the very bottom of the tube or nectary, and suggested that its so doing resulted in the fertilisation of the flower. More recently this has been proved to be the case, and a moth has been discovered in the Island with a proboscis of the required length. In the case of the Long-tailed Lady's-slipper I have often thought that it might possibly be fertilised in Peru by large ants or other creatures unable to fly, and that the long petals served as ladders up which they can climb to the sexual apparatus. It is one of the best species in the

genus and should be introduced to every collection. *C. caudatum* roseum, is a brighter coloured variety which succeeds well under rather cooler treatment than the normal type. This plant grows well in a cool Orchid-house where the temperature is kept about 40° in winter, and is very effective. *C. caudatum* first flowered in the once celebrated collection of Mrs. Lawrence at Ealing Park in 1850. Native of the Peruvian Andes.—*Lindl. Hook.*, t. pl., 7, 658-9; *Pact. Fl. Gard.*, 9; *Flor des Serres*, 6, 566; *Warner's Orch. Plants* 2nd series, t. 1.

C. Stonei (Mr. Stone's Lady's-slipper).—This may be considered as one of the most attractive species in the whole group. It was first imported from Sarawak by Messrs. Hugh Low & Co., and named in honour of Mr. Stone, an enthusiastic cultivator and late gardener to Mr. Day, of Tottenham. It has smooth foliage of a bright green colour, about 1 foot in length, and 1½ to 2 inches in width. The flowers are borne 2 to 4 together, on a large curved erect spike, subtended by large bracts. The flowers are large and brightly coloured; sepals, white, faintly tinged with rose, and heavily blotched behind with purple; petals, 5 inches long, and ½ of an inch broad, drooping, slightly twisted, of a faint yellow colour, streaked and blotched with purple; lip, not unlike a Mahomedan slipper in shape; of a bright rosy-lilac colour, with conspicuous carmine-tinted veins. The style is curiously two-branched, and the staminode is surrounded by a hairy border, like the collar of a Polish tunic. A fine variety of this, *C. Stonei platytanum*, differs from the normal form in having flat petals fully ½ to ¾ of an inch broad, richly blotched with purple. It is both rare and valuable.—*C. Stonei*, *Lindl.*, *Bot. Mag.*, t. 5,349; *Batm.* 2d Cent. Or. Pl. 200; *Jenning's Orch.* t. 12; *C. Stonei platytanum* *Rehb. f. Gard. Chron.*, 1867, p. 1,118, with excellent wood-cut fig.

C. laevigatum (Glossy-leaved Lady's-slipper).—In habit this is barely distinguishable from *C. Stonei*, and their mode of flowering is the same. It is easily distinguished, however, by its smaller flowers, and by the purple markings in front of the ovate dorsal sepal, as well as the scape ovaries, bracts, and petals of the present plant being profusely covered with purple hairs, while in *C. Stonei* they are perfectly smooth. The petals are also much more distinctly twisted, and vary from 4 to 6 inches in length, being of a clear yellow colour, streaked

and spotted with purple at the base; the lip is yellow, shaded with purple. This beautiful plant was introduced from the Philippine Islands by the late Mr. John Gould Veitch, who discovered it growing on the roots of *Vanda Batemanni*. Like its congener, *C. Stonei*, this only succeeds well in a warm genial atmosphere, partially shaded during bright sunshine, with plenty of light during the dull autumn and winter months. Good specimens of both these beautiful plants bear from three to six fine spikes, each bearing three or four flowers.—*C. laevigatum* (*Bateman*), *Bot. Mag.*, t. 5,508; *Batm.* 2d Cent. Or. Pl. t. 101; *Flora des Serres* 17, 1860.

C. caricinum (Ledge-leaved Lady's-slipper).—This is a modest slender-leaved little plant, well worth growing in a mixed collection. Its bright green grassy leaves are produced from a slender rhizome which creeps over the surface of the mossy compost in all directions



Cypripedium Fairicanum.

Its flowers are borne on erect spikes, one to three together, and, though not showy, are extremely delicate in their tinting, and the narrow petals are curiously tortile or twisted like a fanciful corkscrew. Sepals and lip of a pale grass-like green hue; petals, greenish, margined with white, and tipped with purplish-brown. It flowered in Messrs. Veitch's Orchid-houses in 1865, and is one of Mr. Pearce's discoveries. It grows well in a moderately cool and humid temperature, with copious supplies of moisture at the root. I have seen this plant growing vigorously and flowering most profusely in a cool lean-to Orchid-house, with air on night and day in summer. Treated in this manner, this species and the pretty little *C. Schlimmii* do well; both like to feel the effects of condensed moisture on their fresh foliage during the night. It is a native of Peru and Bolivia, and is sometimes known as *C. Pearcei*, as a compliment to its unfortunate discoverer.—*Bot. Mag.*, t. 5, 466.

C. glanduliferum (Blume's glandular-petalled Lady's-slipper).—This is a rare and curious plant, not at present introduced to our collections. It bears large handsome flowers, two or three together on a scape. Petals, 3 or 4 inches in length, acute or sharp pointed, and bearing two or three conspicuous hairy glands along their margins; lip, inflated, pink or bright rose-coloured, with a pair of reversed horn-like appendages inside. It agrees with *C. Parishii*, in having long petals set with large hairy glands, but the petals of the last-named have blunt rounded hairy apices, by which it may readily be distinguished. The only figure I have seen is in "*Blume's Rumphia*," Vol. IV., 198, where it is figured under the name of *C. insigne*, which must not be confounded with the well-known *C. insigne* of Wallich. It is also known as *C. glanduliflorum*. Native of New Guinea, and probably also of Java.

C. Parishii (Rev. C. S. Parish's Cypripede, or the Elephant-crushed Lady's-slipper).—This is a very interesting plant, with broadly strap-shaped deep green leaves bifid at the tip. The flower-spikes are 1 to 2 feet long, bearing from three to five large long-petalled flowers; the upper sepal is ovate, with unfolded margins, and has a strongly defined reel behind; the lower sepal is rather smaller and reflexed; in colour they are pale greenish-yellow. The petals are 4 to 6 inches long, with undulated margins near the base, and the segments become distinctly twisted towards the rounded hairy tips. They are greenish-yellow at the base, margined with purple, while the apical portion is deep claret-purple, with pale margins; each petal has about three hazy marginal glands, the lip is oblong, with the lower lobes inflected in the usual way, the colour being a decided green, shaded with brown. It grows well in a warm genial atmosphere, and has recently been exhibited by Mr. B. S. Williams, at South Kensington. The only other Lady's-slipper that has the peculiar large hairy glands on its long petals is the *C. glanduliferum*, of New Guinea, and that has not the curious blunt tips to its petals like our plant. The plant was introduced by the Rev. C. S. Parish, who met with it in India, near the Siamese frontier.—*C. Parishii*, *Rchb. f. in MS. in litt*; *R. C. Parish in Herb. Kew*; in *Flora*, June, 1869; *Gard. Chron.* 1869, p. 814; *Bot. Mag.*, t. 5, 791.

C. longifolium (Long-leaved or Reichenbach's Lady's-slipper).—This is a free-growing species, introduced by M. Roezli, one of the most intrepid and successful of modern collectors. According to Reichenbach, this plant, *C. Roezlii*, *C. caudatum*, *C. Pearcei*, *C. Schlimmii*, and one or two others, all South American, belong to *Selinipedium*, a genus characterised by having a three-celled ovary. The foliage of this plant is bright green, strap-shaped, 12 to 16 inches long, by 1 to 1½ inches broad. The scape varies from 2 to 4 feet long, bearing ten to twelve or more flowers, which open in gradual succession from below upwards, rarely more than one being open at the same time; in this way a plant often lasts in bloom for a whole year or more. The flowers are of a warm yellowish-green tint, shaded with brown, each having a large green bract at the base. The drooping or divergent petals are 3 or 4 inches long, tapering from the base, where they are half an inch broad, to the attenuated apices. These are of a brownish-purple colour, the lower sepal is much the largest, a very unusual occurrence in the genus, although well marked in the present species, and in *C. Roezlii*. These segments are of a greenish-brown colour, the lip being oblong, olive-green in front, and profusely dotted or speckled within. The rhomboidal, or triangular, staminode has a conspicuous rim of stiff black hairs along its upper margins. It grows well in a moderate temperature. This is also, though erroneously, known as *Reichenbachii* in some gardens. A native of Costa Rica.—*C. longifolium*, *Rchb. f.*, 1869, p. 1,206.

C. Roezlii (Roezli's Lady's-slipper).—This is a very robust plant, very nearly related to the long-leaved Cypripede, but distinguishable by its much longer and broader foliage, and by its flowers being larger and much more showy. The leaves vary from 12 to 18 inches in length, being nearly 2 inches wide, and of the freshest green colour imaginable. It grows freely treated like its congeners. The spike, like that of the last-named, is 2 to 4 feet long, with great

Strelitzia-like bracts at the base of each flower. The flowers open in gradual succession, rarely more than two being open at the same time, and the plant continues flowering for ten or even twelve months from the same spike. The sepals are ovate and of a soft rosy tint, the lower being nearly twice the size of the upper segment. The petals are 3 or 4 inches long, and of a bright rosy-purple colour; the lip is green, shaded with purplish-brown. The inflected sides being pale yellow, profusely warted, and having about two green glands on each side about the centre. It is a noble plant that should be included in every collection. Uplands in South America.

C. japonicum (Japanese Lady's-slipper).—This is a rare and extremely slow growing plant, which I have never seen in cultivation. It is a native of Japan.—*C. japonicum*, Thunberg's *Icon. Jap.* t. 1.

C. Sedenii (M. Seden's Cypripede).—This is a very beautiful hybrid, and very vivid in its colouring. It was raised by Mr. Seden, one of the foremen in the Royal Exotic Nursery, at Chelsea, and is the result of a cross between *C. Schlimmii* and *C. longifolium*. It is an interesting fact that the plants were intercrossed with each other, and seedlings raised from both; the species, as seed-bearing parents, gave exactly the same results. The foliage is strap-shaped, gracefully curved, and of a bright green colour. Flower-spikes, purple, hairy, bearing five to seven flowers each, only one or two being fully expanded at the same time. The sepals are oblong, of a bright rosy colour. Petals, oblong, inclined to be strap-shaped, and partially twisted near the apex, creamy-white with deep rosy margins; lip, oblong, bluntly pointed, the mouth being curiously lobed on each side, and having rounded bosses on the front margin. The inflected sides are pure white, dotted with rose, the staminode being slightly downy and tinted with pale yellow. It flowers very freely throughout the winter, and its bright foliage and brilliant flowers make it a general favourite. Grows well in a cool house.—*Jenning's Orchids*, t. 4; *C. Sedenii*, *Rchb. f. in Gard. Chron.* 1873, p. 1,085.

C. Harrissianum (Dr. Harris's Lady-slipper).—This is a very robust free-growing hybrid, raised by Mr. Dominy between *C. villosum* and *C. barbatum*. The leaves are 5 to 7 inches long, nearly 2 inches broad, and are of a bright green colour, marked with darker green in the way of *C. barbatum*; flowers, large, shining, as if varnished, shaped something like those of the first named parent, but darker in colour, the lip is rich purple, the petals being shaded with purple and brown. It grows and blooms nearly all the year round, and is one of the finest plants in the whole group. Some forms are deeper and brighter in colour, but all are good and well worth culture in the most select collection.—*C. Harrissianum*, *Rchb. f. in Gard. Chron.*, 1869, p. 108.

C. veillarium (Standard Lady's-slipper).—This is another beautiful plant raised in Messrs. Veitch's establishment at Chelsea. It has variegated foliage and is the result of a cross between *C. barbatum* and the pretty little *C. Fairieanum*. The result is a very interesting hybrid nearly exactly intermediate in character between the two species; the dorsal sepal is roundish-oblong, with undulate hairy margins, of a light greenish tint veined with purple; petals, curved like those of the last-named plant, hairy along the margins, pale green in colour, with dark veins and purple spots and markings; lip, purple, shaded with green. It flowers during the winter months, and is well deserving of general culture.—*Rchb. f. in Gard. Chron.* 1870, p. 1,373.

C. Dominii (Mr. Dominy's Cypripede).—This is a free-growing plant with the general habit of *C. caudatum*, except that the leaves are narrower and more gracefully curved. It is the produce of seed from the last-named plant fertilised with *C. caricinum*, and the flowers, although closely resembling *C. caudatum* in form and size, show traces of both parents; the sepals are light green shaded with dark green, the drooping twisted petals being of a pale yellow tint streaked with bright reddish crimson; the inflected lobes of the lip are pure white with rich claret-coloured dots, while the sac-shaped central lobe is green, heavily shaded with purplish-brown. It is a most desirable plant, blooming during the winter and spring months, and lasting a long time in beauty if the flowers are kept dry.—*Rchb. f. in Gard. Chron.* 1870, p. 1,181.

C. Ashburtoniae.—This plant is the result of a cross between the old Bannered Lady's-slipper and the well-known *C. barbatum*. In habit and inflorescence it somewhat resembles both parents. The leaves are shaped like those of *C. insigne*, but are a little broader, bifid at the tip, and covered with dark net-like markings of dark green on a lighter ground. Some individuals are marked nearly as distinctly a *C. barbatum*, while, in others, the markings are barely visible. The flowers are in shape similar to those of the last-named, and are borne singly on a slender chocolate-coloured scape about a foot high. Upper sepal white at the apex, greenish at the base, having numerous deep brownish-purple stripes and blotches; petals slightly deflexed, oblong, wavy along their margins, of a greenish-white with deep purplish veins; the margins being hairy and tinged

with purplish-rose. Lip oblong, rather blunt at the point, and narrowing towards the mouth; the colour is greenish, shaded with purple, the depth of colour varying in different individuals. It is an interesting and easily grown plant, well worth growing. It was raised by Mr. Cross, late gardener to Lady Ashburton, at Melchet Park, Hampshire, after whom it is named.—*C. Ashburtoniae*, Rehb. fil. Gard. Chron., 1871, p. 1,647, where there is a woodcut figure.

C. Crossianum (Mr. Cross's Lady's-slipper).—This is another pleasing hybrid, raised at the same time as the last, and from the same parents. Its oblong foliage is intermediate between that of *C. insigne* and *C. venustum*, being of a glaucous-green tint above, paler below, blotched with purplish-black towards the base. There are a few dark reticulations on the upper surface of the leaf. The flowers are borne on purple hairy scapes, 8 to 12 inches in length; the bract being glaucous, with purple spots; upper sepal, white at the apex, pale green below, with dark green nerves, and a few purple spots at the base; petals, strap-shaped, slightly wavy, of a brownish copper colour, with dark purple or blackish spots; the lip is yellowish, shaded with bronze, and having the green net-work as in *C. venustum*; the staminode is like *C. venustum* in form, but of a yellow or pale honey colour, as in *C. insigne*. It is an interesting plant, and must not be confounded with *C. barbatum* Crossii.—*C. Crossianum* Rehb. f. in Gard. Chron. 1873, p. 877.

Uropedium Lindenii (Linden's Uropede).—This curious and extremely rare plant was named by the late Dr. J. Lindley, one of the most distinguished and acute of all orchidologists. It grows well in a cool house, and was introduced to our collections in 1848 by M. Linden, after whom it is named. As a genus this differs from *Cypripedium* of Linnæus or *Selinipedium* of Reichenbach, by having an elongated petaloid appendage, in place of the swollen slipper-shaped lip. In habit and mode of flowering, the plant is identical with *C. caudatum*, and the flowers closely resemble those of the last-named plant in every respect, except in the slipper being transformed into a long caudal appendage. It does well treated like *C. caudatum*. The plant flowers in the spring and may be regarded as a monstrous form of the last-named species. It is a native of New Granada, where it grows sparingly in moist woods at an altitude of 7,000 to 8,500 feet, and where the mean annual temperature is only 56°. It first flowered with M. Pescatore, of St. Cloud, near Paris, in 1853.—*Uropedium Lindenii*, Lindl., Belg. Hort. 4, 13; Regel. Gartenf., 1861, 315.

F. W. B.

New Golden Fern (*Gymnogramma decomposita*).—As a garden plant, this new Golden Fern will take the position of a companion to the silvery *G. pulchella*, the size, fine cutting, and triangular outline of the fronds, producing a certain amount of similarity, though botanically the two are perfectly distinct. It was introduced from the Andes of South America, by John Gair, Esq., of Falkirk, by whom it was sent to Kew, and from thence it has been distributed. The fronds are nearly deltoid in outline, membranous in texture, and quadripinnatifid in division, supported on dark chestnut-brown shining stipes more than a foot long, clothed with sulphury meal at the base, and furnished with a few scattered pale brown scales. The pinnæ are set on tolerably close, of a clear green colour, the pinnules close lanceolate-deltoid, the tertiary segments palmatifidly cut down into linear-acute segments, and bearing the sulphur-yellow sori through the whole length of the vein. It is a fine stove species, the large triangular fronds having a peculiarly elegant appearance from their fine cutting, while the minute finger-like divisions into which the lobes are split up give it a distinctive character.—*Florist*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Crinum asiaticum.—This has bright green leaves of a fresh glossy green, and the flowers are white and delicately perfumed, twenty or thirty being borne on each scape. They are succeeded by great pale green globular fruits, not unlike small Apples, and these, even after the flowers are over, give the plant a striking appearance.—J. D. K.

Leuchtenbergia principis.—A fine healthy specimen of this rare succulent is now showing flower in the succulent-house at Kew. The plant has peculiar elongated angular mamme, from the apices of which the flowers appear. It is a plant but rarely seen, although last year it bloomed well in Mr. Peacock's collection at Hammersmith.

Crasula Saxifraga.—This pretty tuberous-rooted species has been recently figured in the *Botanical Magazine* (see t. 6, 068). Its rounded crenulate leaves are deep green above and of a lively rosy-carmine beneath. The flowers are of a pale rose colour, and are borne in a small dense cyme at the apex of the peduncles, from 4 to 6 inches in height. It is now in flower at Kew, and deserves a place in every collection of succulent plants.—B.

Fuchsia Seed.—A person visiting a Fuchsia-house, on one of the Continental seed farms, was asked to guess the weight of seed procured from the house—about 10 by 30 feet in size. Twenty, ten, and even as little as one pound were suggested, but the fact proved that the entire product was only one quarter of an ounce. Mr. Cannell's specimen Fuchsia-house, 30 feet by 20 feet, has not yet afforded him a quarter of an ounce in one season.

NOTES FROM THE LEVANT.

HAVING lately returned from a short tour in the Levant, during which I paid some attention to the horticulture and wild flowers of the countries which I visited a few notes on what I saw may perhaps be of interest to the readers of THE GARDEN. My intention was to have visited the islands of Crete and Cyprus, and the south coast of Asia Minor; but, various causes having prevented my carrying out this plan, I took the French steamer from Marseilles on March 6, for Smyrna. Though we called at both Palermo and Messina, I had no time on shore at either place to collect plants, or to see anything of the natural productions of Sicily. A hurried walk through the public gardens at Palermo showed that the climate must be a remarkably fine one; for, though the spring was said to be unusually backward, and snow was lying on the mountains at 3,000 feet above the sea, Irises and Roses were both coming into flower on March 9. Date Palms, Magnolias, Loquats, and Oranges were very fine in these gardens; and a good many plants, which in England are usually kept in a warm greenhouse, such as Cannas, Caladiums, *Cycas revoluta*, two or three species of *Araucaria*, and others, were thriving in the open air. The botanic gardens here are said to be very interesting, and much better cared for than many Italian botanic gardens; but, as it was getting dark when I landed, I had not time to visit them. A month or so in Sicily would probably repay a lover of flowers extremely well; for, having a greater variety of climate than any other island in the Mediterranean, a very rich soil, and a great diversity of natural features, its flora is extremely rich and varied. Two days after leaving Sicily the steamer arrived at Syra, one of the principal islands in the Greek Archipelago, and the seat of a large and prosperous trade. As we had to remain three hours, I took the opportunity of getting on shore, and walked up to the top of the hill above the town, which is about 1,200 to 1,500 feet high. Having always supposed that the climate of the Greek islands was, even in winter, a warm one, I was greatly astonished to see snow lying on all the islands, which were more than 2,000 feet high. By the middle of March, spring is usually at its height here; but this winter seems to have been one of unusual severity all over the Levant, and I hear that the streets of Athens and Smyrna have, within a few days, been almost blocked with snow. Syra, like most of the Greek islands, looks from a short distance extremely barren and rocky; but, wherever any soil has accumulated in valleys or in hollows in the rocks, which are tolerably sheltered from the high winds, Corn, Vines, and fruit trees are cultivated. The most abundant and conspicuous plants are *Asphodelus ramosus*, *Scilla maritima*, and *Poterium spinosum*, a curious-looking herb with branching spines. A yellow-flowered *Genista* was also coming into bloom, notwithstanding the cold; whilst *Anemones*, *Grape Hyacinths*, and a small bulbous *Iris* (*Xiphium sisyrinchium*) starred the ground with patches of colour. On ascending a few hundred feet, the Squills and *Asphodel* became more stunted; and near the top I found a species of *Crocus* in seed, probably *C. Fleischeri*, a small *Romulea*, a *Colchicum*, and other dwarf bulbs, all in a very starved condition, owing to the absence of soil. What there was is stiff red loam without any sand, formed by the decomposition of limestone rock. It is in such a soil, I may observe, that most of the mountain plants I collected in Asia Minor grow, including nearly all the *Croci*; and Herbert mentions the same thing with regard to the *Croci* he found in the Ionian Islands. The only one which I have found in a sandy soil is *C. sativus*; but, though they can resist the immense heat on these islands, they grow much stronger when slightly protected from the sun. The gardens of Syra seem very poor, as, owing to the great scarcity of water for irrigation, not many vegetables or flowers are grown. Figs, Peaches, Prickly Pears, and Grapes seem to be the principal fruits, as I saw neither Oranges or Olives. I arrived at Smyrna on March 12, in a heavy storm of wind and rain, and found much snow lying on all the mountains round. Everyone is talking of the unusual severity of the weather, and judging from the look of the trees, they have good reason to complain, for many of the Oranges are so cut by the cold that they will hardly get over it. Strolling up the hill at the back of the town, not a flower was to be seen, but a small pink *Erodium*, just showing

above ground. Outside Smyrna, as is usual in most Turkish towns, are large cemeteries planted with Cypresses of great age and height. This species, *Cupressus fastigiata*, is hardly seen in perfection, except in a Turkish cemetery, though as an individual tree, the finest I have ever seen is in the garden of Mr. Whittall, at Bournabat, near Smyrna. This tree is a perfect model of health and symmetry. Though at least 80 feet high, and very old, it is so perfectly furnished from top to bottom with branches, that there is not in the whole tree a bare or irregular place to be seen; the fellow tree to it, on the other side of the entrance, was unfortunately blown down, but the one that remains still acts as a noble sentinel at the gate of one of the best known, and most hospitable houses near Smyrna. During the week I remained at Smyrna, the weather continued very bad, heavy snow on the mountains and rain on the coast, so after making two or three excursions in the neighbourhood, I saw that very little could be done at present in the way of collecting flowers. I found, however, at last three species of *Crocus*, two *Trichonemas*, and a few other bulbous plants coming into bloom. The soil of the plains round Smyrna, is a very rich deep loam, and where water can be obtained for irrigation will grow almost any kind of crop in perfection. Wheat, Vines, Maize, and Cotton are the principal crops of the country, but the wine produced is not of good quality, though strong and cheap. I have never tasted in any part of the Levant wine that I really liked, most of the sorts being too strong and sweet to drink, unless mixed with at least as much water. Whether this is on account of the soil and climate, or the way of making the wine, I am not sure, but probably the great heat and richness of the soil has something to do with it. Almost all kinds of fruit grow well near Smyrna, especially Pomegranates, Apples, Peaches, Grapes, and Apricots. The Pomagranates of Bounarbashi, are very celebrated, and really are far superior to any I have eaten elsewhere. In the month of March and April they still keep fresh and are wonderfully sweet and juicy. The hills round Smyrna are of limestone, very barren and stony, and covered in most parts with a scrub of dwarf or evergreen Oak, *Cistus*, and other shrubs. Pines grow on the higher parts of the hills in scattered woods, but few deciduous trees seem to grow here. Oleanders and Myrtles fill the beds of all the streams and water courses, the former growing to a height of 12 or 15 feet. Before leaving Smyrna, I made an expedition to Ephesus, where I found vegetation rather more advanced than at the former place. The hills here were covered with an immense species of *Ferula*, the dead flower-stalks of which were 7 or 8 feet high, and 2 inches in diameter. Two sorts of *Asphodel* were also very abundant, and some interesting succulent plants, Ferns, and creepers were found in the rocky chasms of the hill on which the ruins mostly stand. In more shady parts of these gullies the ground was perfectly covered with the leaves of *Cyclamen hederæfolium* growing with a vigour I have never seen elsewhere. Some of the corms I took up were not less than 6 inches in diameter, but so deeply buried in black leaf-mould that they were not easy to get up. *Cyclamens* are called Sowbread in Turkey, as well as in Europe, but I do not think the name is a well-founded one, as though wild pigs are abundant in many parts of the country, I never saw the marks of their rooting where *Cyclamens* grew. One of the most beautiful trees for its size in Europe, *Arbutus andrachne*, is common on the hill sides near Ephesus and in many parts of Turkey. The smooth bark resembles red Russia leather, covered with a thin silvery skin, which peels off in winter. The flowers are produced in April in large white panicles, and which give the tree a most elegant appearance, and make it a worthy ornament for an English lawn. On March 21st I left Smyrna in a small English steamer, which calls at various places on the coast of Asia Minor, intending to land at Macri, in Lycia, a very beautiful and little-known part of Asia Minor, which offers greater attractions to the naturalist, sportsman, antiquarian, or artist, than any country I have been in except the Himalaya. On the way we touched at Scio, a very fertile island, where Mastic, a spirit very much drunk by Greeks all over the east, is principally made.

Samos, a good-sized island, which produces some of the best wine in the Levant, was the next calling place, and here I had time for a hurried run on shore. Spring was at least fifteen

days in advance of Smyrna, and many flowers were out; among them gorgeous *Anemones*, *Trichonemas*, *Cerinthas*, *Chrysanthemums*, and three sorts of Ferns, *Adiantum Capillus Veneris*, *Ceterach officinarum*, and *Nothochlæna Marantæ*. The Vines were just bursting their buds, and all looked very inviting for an exploration of the island, which having mountains of 3,000 and 4,000 feet high is sure to contain some fine plants. Early next morning we were at Cos, an island which has the largest extent of level ground I have seen in the archipelago. Here there is a celebrated Plane tree, which, however, did not appear to me so fine as some I have seen in Macedonia and on the Bosphorus. It is, as usual in Turkish towns, carefully preserved on account of the shade, which is, in these sunny islands, so valuable. Symi was the next island where I landed; a barren rock, producing hardly anything but sponges, which are collected by the inhabitants of Symi and Caylmo in different parts of the Levant, and brought here to be dried and manipulated. The natives of these islands are wonderfully expert in diving, being able to reach the bottom in as much as 30 fathoms of water, and to remain down nearly two minutes. After landing in the harbour of the thriving little town, I went up the hill-side, which I found perfectly covered with the most lovely Persian *Cyclamens* in full flower. They were growing in the crevices and on the ledges of hard sharp white limestone rocks, the soil being a stiff red loam; and though the corms were smaller than we grow in greenhouses, I never saw finer flowers or better marked leaves than on these stony barren islands.

(To be continued.)

H. J. ELWES.

How to Withstand the Heat.—Under this heading the *Lancet* gives some seasonable advice which none require more than those who pass their time in gardens on these sunny days. About this season of the year we commonly receive various communications, some asking for and others tendering advice to the public as to the best methods of avoiding sunstroke. The necessary precautions are, after all, such as common sense would dictate. Temperate living, light and loose clothing, proper protection for the head, a cold bath in the morning, and the avoidance of that excitable fussiness as to the heat of the weather, which so many persons exhibit to the increase of their own and other people's discomfort. Veritable cases of sunstroke do occur in this country, of course; but the majority of such attacks, especially when fatal, are probably attributable to the combined effects of heat and languor and some pre-existing affection of the circulatory or respiratory organs. A condition, which is in reality more allied to fainting than to sunstroke, may overtake those who encounter heat and fatigue, with long intervals of abstinence from food; and the same thing is very apt to follow in those persons who have deranged their digestion and overloaded their systems by a course of dinners. Young and healthy men do not require any stimulants; they can refresh and cool themselves with any iced non-alcoholic drinks, or with iced claret and water. A great desideratum is a really palatable and cool beverage free from alcohol. After dry and hot seasons, when choleraic and febrile complaints are likely to occur, many people begin to manifest a hydrophobia without any antecedent bite of a rabid dog, for they are not at all confident as to the quality of any drinking water, even if it were procurable in a fresh pleasant state at refreshment rooms. In the case of middle-aged and older men, who, from being occupied in town, are very apt to abstain from taking anything during the day, and to forget, perhaps, that their appetite for breakfast in hot weather is small, we think a very light mid-day meal or a sandwich, with some iced claret and water, or, in cases of feeble health, or where extra fatigue is undertaken, some stimulant in the shape of sherry or even brandy and soda-water, advisable. Of one thing, however, we are sure: that the frequent recourse to very small doses of alcohol in a variety of shapes is bad.

The Yucca as a Vegetable.—A plant of great interest is the *Mague* or *Mescal*, growing in Southern Arizona—a peculiar species of *Yucca* (probably *Y. brevifolia*). The plant consists of about eighty to one hundred leaves, from 2 to 3 feet long, pointed to a sharp thorn at the end; all the developed leaves are concentrically united at the ground; those undeveloped (the heart of the plant) remain soft and perfectly white so long at the sunlight is kept away by surrounding outer leaves. The Indians bake this heart in coals for eight or ten hours, when it acquires an exceedingly sweet taste, much like honey. The Mexicans also prepare from this baked *Mescal* an alcoholic beverage.

THE ARBORETUM.

BAMBOOS AND HALF-HARDY TREES AND SHRUBS
AT FOTA, CORK HARBOUR.

IN the beautifully laid-out pleasure grounds of this fine demesne, the *Benthamia fragifera* or Strawberry tree, which is also known by the name of *Cornus capitata*, indigenous to Simla and Bootan, attains a luxuriance and beauty unequalled in my experience in any other part of the kingdom; the finest specimen, now (July 10) completely covered with its large and showy white blossoms, is 24 feet in height and 123 feet in circumference, its branches trailing down to the ground, and the whole forming a most beautiful and conspicuous object in the grounds. There are a number of others scattered about the grounds, many of which reach the height of 40 feet, but are not such spreading or well-furnished specimens as the one above-mentioned. This ripens its handsome fruit in large quantities towards the end of August; it is, however, not allowed long to adorn the tree, as it is most greedily devoured by birds as soon as ever it ripens; they are attracted by its bright colours. The fruit is well and accurately figured in Vol. 78, of the *Botanical Magazine*, tab. 4,641. The next most striking and uncommon plant in this collection is the variety of Bamboo named *Arundinaria falcata*, with which a small island in a piece of artificial water is completely covered, producing, when the graceful feathery foliage is at its best, which it will be next month, a most beautiful and striking effect. The Bamboos grow in clumps of from 400 to 500 canes each, about 18 feet in circumference, and usually reach a height of from 24 to 26 feet. Underneath these Bamboos were planted, at the commencement of last autumn, two fine specimens of the fine tree Fern *Dicksonia antarctica*, which are looking at present in extremely vigorous health, having thrown up several new fronds at the commencement of this summer, and seeming not to have suffered in any way from the previous winter, which, however, was one of the mildest we have had in this district for many years. It is to be hoped that these tree Ferns may in time get quite acclimatised and reach a large size in this exceptionally sheltered and favoured situation. The ornamental water round the Bamboo island is now very gay with the bright golden blossoms of that pretty hardy aquatic, *Nuphar pumila*, which reproduces itself with the greatest possible rapidity from seed. The deliciously sweet-scented, and far too little grown *Aponogeton distachyon* has also been in profuse and almost continuous bloom for the last nine months, and has now lost all its leaves and apparently gone to rest for a season; it is perfectly hardy. The banks of the ornamental water are adorned with a profusion of the handsome *Phormium tenax*, or New Zealand Flax, which here attains the utmost luxuriance, many of the clumps being 13 feet in diameter and 9½ feet high, interspersed with huge tufts of the Pampas Grass (*Gynerium argenteum*), and, with Bamboos in the centre of the island, they impart to the place quite a tropical appearance. In another part of the grounds, *Chamærops humilis* has been planted out, without any protection, thirteen years, and is now 10 feet in height with a trunk 3 feet in circumference at the base. *Dracæna* (or as it is now more correctly named *Dracænopsis*) *australis*, has been planted out for over four years, and is now over 9 feet high. The Tulip tree (*Liriodendron tulipiferum*) is very fine

here, one specimen measuring rather over 60 feet in height and 11 feet in circumference of trunk at a distance of 4 feet from the ground; this tree blossoms freely nearly every year. There is also one of the finest specimens of *Pinus insignis* here that I have ever seen anywhere; it measures 168 feet round its branches, which feather beautifully down to the ground, and its trunk, at a distance of 1 foot from the ground, measures 10 feet in circumference. The *Eucalyptus globulus*, or Fever Gum tree, has here reached the height of 45 feet, and its trunk 2 feet from the ground measures 7 feet in circumference, but the timber is so extremely brittle, that every severe gale tears off from it several branches, thus detracting much from what would otherwise be a very fine specimen of this uncommon and valuable ornamental tree. The common *Arbutus* thrives exceedingly well here, and one fine specimen measures 150 feet round the outside spread of its branches. There are also some very handsome specimens of the *Cryptomeria japonica*, one of them measuring 35 feet in height, with a spread of branches of 95 feet in circumference. A fine specimen also of the *Taxodium*, or *Sequoia sempervirens*, has reached 40 feet in height, and measures 8 feet in circumference of trunk at the base. The proprietor of these beautiful grounds is most anxious to increase the number of handsome plants, usually considered tender and requiring the protection of a greenhouse, but which live and thrive in the open air in this mild climate. He has, therefore, planted out with this view *Cycas revoluta*, and a number of other fine things, some of which it is hoped may ultimately prove hardy. W. E. G.



Abies Gordoni pumila.

GORDON'S DWARF FIR.

(ABIES GORDONI PUMILA.)

THIS variety, which was raised by M. Molet, nurseryman, of Plessis-Piquet, forms a dwarf pyramidal shrub, with numerous erect branches, covered with a smooth bark of a light green or slightly yellow colour. The leaves are of a deep green on the upper surface, and are marked underneath with two glaucous bands. It forms a very handsome miniature shrub, well suited for small lawns or gardens, while the leaves never turn brown under the sun, as those of the parent plant are liable to do. Another advantage which it possesses over the latter is, that cuttings from all the branches form vertical leading shoots as readily as if they were seedlings, a property which belongs to hardly any

other species or variety of *Abies*. The general appearance of this graceful variety is well shown in the accompanying illustration. W. M.

NEW METHOD OF CLEARING GROUND OF TREES.

WE had an opportunity of witnessing the other day, on the estate of Grangemuir, near Anstruther, a new system for clearing ground of trees, recently introduced by Mr. A. Gilchrist, Carvennour. Mr. Gilchrist, as local manager in Fifeshire for the Scottish Steam Cultivation Company, has of course long been familiar with the use of agricultural engines, and when it became necessary, some three or four years ago, to root out an old hedge which encumbered his farm, he bethought him of attaching chains to the stumps and drawing them out by means of the steam drum commonly used for plough traction. Finding that a great deal of time and trouble was thus saved, he applied the same method to the removal of trees, and with results equally satisfactory. There is now, for example, lying on the farm the stump of a tree 3 feet in diameter, which he successfully uprooted. The system has since, we believe, been tried in various

places—among others on the property of Mr. Gordon, of Cluny, and on the northern estates of the Duke of Sutherland. As exhibited the other day, it was applied to the removal of a strip of plantation, consisting of Oak, Beech, and Plane trees, said to be about a hundred years old, but which have made no advance in growth for twenty years past. The engine, a machine of 12-horse power, being the same that is used for steam ploughing by the wire-rope system, was placed in an adjoining field, near the trees to be operated upon, though it subsequently appeared that the work could be done as effectually from a distance of 150 or 200 yards. A chain being hitched round a tree at such distance from the ground as might be deemed advisable, the wire rope of the engine was attached, when, with a turn or two of the drum, the roots were wrenched up bodily with a large ball of earth adhering. Notwithstanding that the soil was dry and hard, the work went on apace, about 300 trees, varying from 6 to 12 inches in diameter, being rooted up in a few hours. The machine was afterwards removed to the vicinity of another plantation, where considerably larger timber could be operated on. Here, on the first trial, a sturdy Beech of 22 inches in diameter was overturned without difficulty. A couple of Oaks of rather smaller girth were next dealt with, but in their case the roots held fast till the timber gave way under the strain. The same thing had happened with two or three of the smaller trees operated upon earlier in the day, the reason apparently being that, with a view to get the largest possible leverage upon the roots, the chains had been fixed too high. The experiments seemed to show that with a sufficient power, applied at the proper height, any tree of ordinary dimensions could be wrenched from its bed. It was equally evident, however, that for trees of large size, which required to be laid hold of at no great height, considerable engine-power and thoroughly reliable tackle would be necessary. The last tree taken in hand was a large Beech, similar to the one that had been successfully lifted. In the first instance, the chain was attached too high, and when the pull came the trunk was split. A fresh hold was then taken within a few feet of the ground, but the consequent loss of leverage involved an increase of strain, under which the wire rope gave way, though it was clear that if the tackle had held good the tree would have yielded to a little more pressure. Among those who witnessed the trials were Mr. James Whyte and Mr. Miller (of the firm of Messrs. James & John Miller), both of whom are specially interested in the system with reference to its applicability to Canada. It is estimated that with an engine specially constructed for the purpose, say of 14 horse-power, an acre of forest timber could be thoroughly uprooted in the course of a day's work, being as much as a man could cut down in a week, leaving the stumps and roots to be subsequently dealt with. In this view the matter has presented itself to the minds of some enterprising gentlemen as a promising commercial speculation, and we hear that a movement is on foot for the formation of a company, with the Duke of Manchester as chairman, with the view of putting the system into a practical shape. Besides the facilities it offers for clearing land intended to be cultivated, it seems to commend itself to those interested in the timber and bark trades; hence the attention bestowed on it by a firm like that of the Messrs. Miller, which uses annually in the manufacture of tanning the bark of many thousand Canadian Hemlocks.—*Scotsman*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

New White Lilac.—Mille, Legraye, florist, of Liège, has succeeded in raising a new variety of White Lilac, which is described in the *Belgique Horticult* as being exceedingly fine, the flowers being of large size, good substance, and of the purest white colour, with anthers of a golden yellow, and arranged in large well-furnished clusters. The jury at the International Exhibition at Maestricht awarded the plant a first prize, and also bestowed on it the title of Reine des Pays-Bas (Queen of the Netherlands).

Reid's Weeping Peach.—This is decidedly pretty and attractive, for, in addition to its gracefully drooping branches, the bloom adds another interesting feature to the tree. It was a chance seedling that originated in the grounds of the late Mr. William Reid, of Elizabeth Town, New Jersey, and in its natural state was a sprawling shrub. Worked standard high, however, it becomes very graceful without artificial training.—*Horticulturist*.

Virginian Date Plum (*Diospyros virginiana*).—This handsome tree has always struck us as worthy of a place among those having a pendulous tendency though it can only be said to be so in a slight degree. The glossy dark green foliage and distinct aspect of this tree also recommend it greatly. The most accessible specimen we know of is in the Long Walk, Kensington Gardens, but it is not rare to see good ones wherever collections of trees have been planted.

Bog Yew.—This wood is to be found plentifully in Irish bogs, and some of it is so hard that it gives fire at the stroke of the hatchet. A variety of useful domestic utensils and furniture have been made from it. We have seen rolling-pins, punch-lades, chests, tables, chairs, and various ornaments made from the bog Yew. The ordinary varieties of the Yew, foreign and acclimatised, are extensively used for furniture-making purposes, and the root of the tree is sawn into veneers, on account of its fine feathery vein, which shows well when polished. The wood is applicable to the making of mathematical instruments, comb, and pipe making, and several ornamental uses, through the skill of the turner and carver combined.

THE LIBRARY.

ROSES AND ROSE CULTURE.*

In this little shilling book, consisting of eighty-three pages, Mr. William Paul tells amateur Rose growers all that is really necessary for them to know, in order to make them successful rosarians. The following chapter on the pot Rose will show the way in which the different subjects are treated:

In what manner shall we grow our pot Roses? This is the first point to settle. Shall we choose them on their own roots, or worked on the Manetti or Dog Rose? Shall we not also have a few standards as well as dwarfs in pots? I may briefly say that I prefer on their own roots such kinds as grow freely in that way, because they renew themselves continually and vigorously by suckers or underground shoots. But some kinds thrive better "worked," and, therefore, the sound rule of practice is to choose each variety in the way in which it is known to grow best. As to standard Roses, they are beautiful objects in pots for conservatories, especially the Moss and Tea-scented kinds, although they are scarcely suitable for small greenhouses. The spring or early summer is a good time at which to begin this branch of Rose-culture. It is the greatest economy to choose plants a little in advance of the ordinary sale plants. When such can be obtained, grow them under glass in a cold frame or greenhouse throughout the summer. It is important that the summer's growth should be well matured before the leaves fall, and an early growth should be encouraged. Such kinds as cannot be obtained in pots in spring and summer may be added from the ground in autumn (October), and, when potted, should be plunged in some sheltered situation out-of-doors. Assuming that pot Roses are required to flower in the month of May, before the Roses appear out-of-doors, the plants should be pruned and placed in a warm pit or greenhouse in February, slightly increasing the temperature from week to week, until a maximum of 60° by day and 50° by night be obtained. Syringing should be freely resorted to morning and evening in warm, sunny days, and sparingly applied in cold, cloudy weather. Clarified soot-water is highly valuable for this purpose. As the greenfly appears (which it surely will do), the house must be filled with tobacco-smoke from time to time. Mildew, should it arise, must be kept in check by dusting the leaves with sulphur immediately after syringing. Roses, when in pots, having but a limited area from which to draw their food, require a rich soil, and this should be supplemented from the time the leaves are half grown until the flowering is over with constant doses of weak liquid manure. Roses in pots, when growing and flowering, can scarcely be over-watered, provided the pots be well drained and the soil thoroughly porous. Two parts good fibrous strong loam, two parts well-decayed stable-manure (the remains of a hot-bed), and one part drift or river-sand, will form a capital soil for them. Crushed bones in small quantity may be added, as they yield a permanent supply of food, and increase the porosity of the soil. Plants growing in pots should be pruned much closer than those growing in the ground. In fact, with the exception of the hybrid Bourbons, and some few shy-blooming hybrid Perpetuals, the pruned shoots should not be allowed to develop more than two eyes each. These should be obtained from near the base of the shoot, not quite at the base, for those lower eyes, if they develop, should be rubbed out. The dormant eyes will quickly burst forth after pruning, and should be closely watched, that the Rose-grub may be destroyed, or the flowering will be irregular and unsatisfactory. Supernumerary buds should also be rubbed out in this early stage of growth, especially if a moderate number of large handsome flowers is preferred to a larger number of small ones. As the shoots increase in length they should be tied out, each flower-shoot having a separate stick to support the flower. Just before the plants come into bloom, a thin shading of scrim should be drawn over or under the glass, to protect the flowers from the sun, and the temperature may be slightly lowered, to prolong the period of flowering. When the flowering is over, the Tea-scented Roses should be allowed to make their new or second growth under glass, but the other kinds may be removed out-of-doors to some spot sheltered from the full sun and wind, that the foliage may be preserved in a healthy and perfect state. The Tea-scented may be removed to join them when the growth is finished and partially hardened, and the whole may be taken back to the house about the end of September, re-potting at the time such as may require it. Although Roses in pots may be grown to flower finer in May than in any other month, they may be had very good in March and April. The same method of growth is followed for the earlier as for the later bloom, but the plants should be brought to rest at an earlier period and set growing early in January, a greater degree of heat being maintained if March and April Roses are sought

* "Roses and Rose Culture." By Wm. Paul, F.R.H.S. London: Kent and Co.

for. A span-roofed house sloping to the east and west is the most suitable for pot Roses. The plants should be kept as close to the glass as possible, and there should be the choice of giving either top or side air, or both, when required. It should be mentioned that some Roses produce finer flowers when grown in pots under glass than when in the open air, and different varieties are much influenced by the varying systems of cultivation. The groups of Roses best suited for growing in pots are Tea-scented, Hybrid Perpetual, Hybrid Bourbon, Noisette, and Bourbon, and to these should be added the Moss, on account of their picturesque beauty and distinctness. Certain kinds of Roses which grow and flower freely (the Chinese and Tea-scented especially) may be so managed as to produce flowers throughout the month of December. The plants which have flowered in May may be used for this purpose. It is only necessary to keep the successional flowers which arise in July and August suppressed in the bud state, when fresh shoots will push forth bearing flower-buds. Carefully preserve these by placing the plants in a tolerably dry and warm house by the end of September, and the flowers will expand slowly and at intervals up to Christmas. These plants cannot, however, be brought into flower early the next year; they must have their period of rest, and should be kept as backward as possible in the succeeding spring, so that they flower in June and July.

A TREATISE ON FOOD AND DIETETICS.*

This is a good book on a very important but much neglected subject. Even horticulturists, familiar with the rapid march of progress in our own art, have often little idea of the greater rapidity in the progress of the science of chemistry and other branches of knowledge which bear on the question of dietetics. The discoveries and experiments made within the last dozen years have completely upturned most of the previously received theories on this matter, and hence the necessity for treatises like this, which keep the student "up to the time" in the matters of which it treats. We are glad to observe that the author goes some way towards telling the truth about the exaggerated importance attached to meat as human food, and the evil results attending its excessive use; but, even he is a little hampered by popular use and prejudice in this way. No fact within human experience is more fully proved, than that perfect development of man, physically and mentally, is attained on food gathered from the vegetable kingdom exclusively, or with a very small proportion of meat. Let no one think that the discussion of this matter is without our province, for, it is beyond a doubt, that the erroneous estimate of the importance of an abundance of meat food at all meals (which is an article of faith with the Anglo-Saxon race everywhere), leads directly to the neglect of our fruits as articles of food, and of vegetables and their preparation for the table; and, thus it is that, whereas, we have meats in variety, and of the best quality, in good hotels and restaurants, vegetables as to kind, quality, or cooking, are, as a rule, so wretched, as to be inedible. The author says on this subject:

Thus it is seen that a great diversity exists as regards the food consumed by the human race in different parts of the globe. Instances are to be found where life is sustained upon a wholly vegetable, a wholly animal, and a mixed diet. The mixed diet, however, may be regarded as that which, in the plan of Nature, is designed for man's subsistence. It is upon this that he appears to attain the highest state of physical development and intellectual vigour. It is this which, certainly in temperate climes, he is led to consume by general inclination, when circumstances allow the inclination to guide him; and, lastly, it is this which stands in conformity with the construction of his teeth and the anatomy of his digestive apparatus in general. Notwithstanding these considerations there are those—but few in number, it is true—who contend that vegetable food alone is best adapted to meet our requirements. Under the style of vegetarians, they act upon the principle they profess. It is true that vegetable food, with its large proportion of non-nitrogenous matter, yields, in a simple and direct manner, according to the views now entertained and fully discussed in an earlier part of this work, the requisites for force as well as heat-production; and, in order to show that vegetable food is better adapted than animal for contributing to the performance of muscular work, reference has been made to our beasts of burden, which, as is well known, belong almost exclusively to the herbivorous tribe. That carnivorous animals, however, are not unsuited for such purpose is proved in the case of dogs, which, in some northern and other countries, are very extensively employed

for the performance of work. To regard man's maintenance too closely in association with the mere performance of mechanical work—to look upon him, in other words, as though he were solely designed for the conversion of food into mechanical power is not, it may be also said, taking a high view of his position. The prevailing tendency, certainly in the England of the present day, is to give an undue weight to the value of animal food, and this has been encouraged by the teachings of Liebig regarding the origin of muscular power—teachings which, during the last few years, have been shown to be untenable. Many people seem to look upon meat almost as though it formed the only food that really nourished and supplied what is wanted for work. The physician is constantly coming across an expression of this view. Undoubtedly a greater feeling of satiety is produced by meat than by other food. It forms a greater stay to the stomach, but this arises from the stomach constituting the seat of its digestion, and a longer time being occupied before it passes on and leaves the organ in an empty condition. Against those who think that a large consumption of meat is a *sine quâ non* for the maintenance of health and strength, the experience of vegetarians may be adduced. In the effects of the Scotch prison dietaries, corroborative testimony is afforded. Dr. J. B. Thomson, for instance, resident surgeon to the General Prison for Scotland, writing in the *Medical Times and Gazette*, Vol. I., 1868, speaks in favour, from ten years' experience, of a diet into which meat entered very sparingly, and which contained instead a moderate amount of milk. He says, since the employment of the improved dietaries sanctioned by the Secretary of State in 1854, the dietary in the General Prison for Scotland for all adult male prisoners, under sentence of nine, and not exceeding twenty-four months, had consisted of bread, oatmeal, barley, 1 oz. of meat per diem, made into soup, with succulent vegetables, and 20 oz. of skimmed or butter milk. One day in the week fish had been substituted for the soup. The health of the prisoners had been uniformly good. Weighing on admission and liberation had been carried out, and 88 per cent. were found to have gained or maintained their weight. Again, as shown by one of Dr. E. Smith's reports, it is not uncommon to find, amongst the agricultural labourers of Scotland, that no meat is consumed, oatmeal and milk forming their staple articles of diet. Further, Dr. Guy, from his observations in the case of English prisons, gives as one of his deductions, "that we possess conclusive evidence of the sufficiency of a diet from which meat is wholly excluded, and even of a diet consisting wholly of vegetable matter."

I have introduced these particulars, not for the purpose of showing that a diet without meat is to be considered desirable, but for strengthening the argument that the consumption of meat to the extent that many persons believe necessary for the maintenance of health and strength is not in reality so. It has been before stated that physiological considerations point to a mixed diet as being most in harmony with our nature, and it may probably be considered that the most suitable admixture contains about one fourth, or rather more, of animal food. With more animal food than this, the excretory organs are unnecessarily taxed, and the system exposed to contamination with impurities, for the nitrogen of the superfluous nitrogenous matter has to be eliminated, and is found to escape, in combination with other elements, under the form of certain excretory products, without having contributed to any useful purpose. A defective transformative and eliminative action will lead to a retention of the products of metamorphosis of this superfluous nitrogenous matter in the system, and there is reason to believe that gouty affections, and other morbid conditions, are sometimes induced in this way.

To Soften Hard Putty.—It is well known that common putty becomes exceedingly hard with age, a circumstance which renders the removal of glass from sashes peculiarly difficult. A practical man tells us that he thinks himself lucky if he can take out one pane out of three without breakage. It is stated, however, that the putty may be softened by using a paste of caustic potassa, easily prepared by mixing the caustic alkali, or even carbonate of potash or soda, with equal parts of freshly burnt quick-lime, which has previously been sprinkled with water, so as to cause it to fall into powder. This is then mixed with water to a paste, and is spread on the putty to be softened. Where one application is not sufficient, it is repeated. In order to prevent the paste from drying too quickly, it is well to mix it with less water, adding some soft-soap instead.

Digging, a Cure for Dyspepsia.—A gentleman saw an advertisement that a receipt for the cure of dyspepsia might be had by sending two postage stamps to the advertiser, and the answer was, "Dig in your garden, and let whisky alone."

* "A Treatise on Food and Dietetics, Physiologically and Therapeutically considered." By F. W. Favey, M.D., F.R.S., &c. London: J. & A. Churchill.

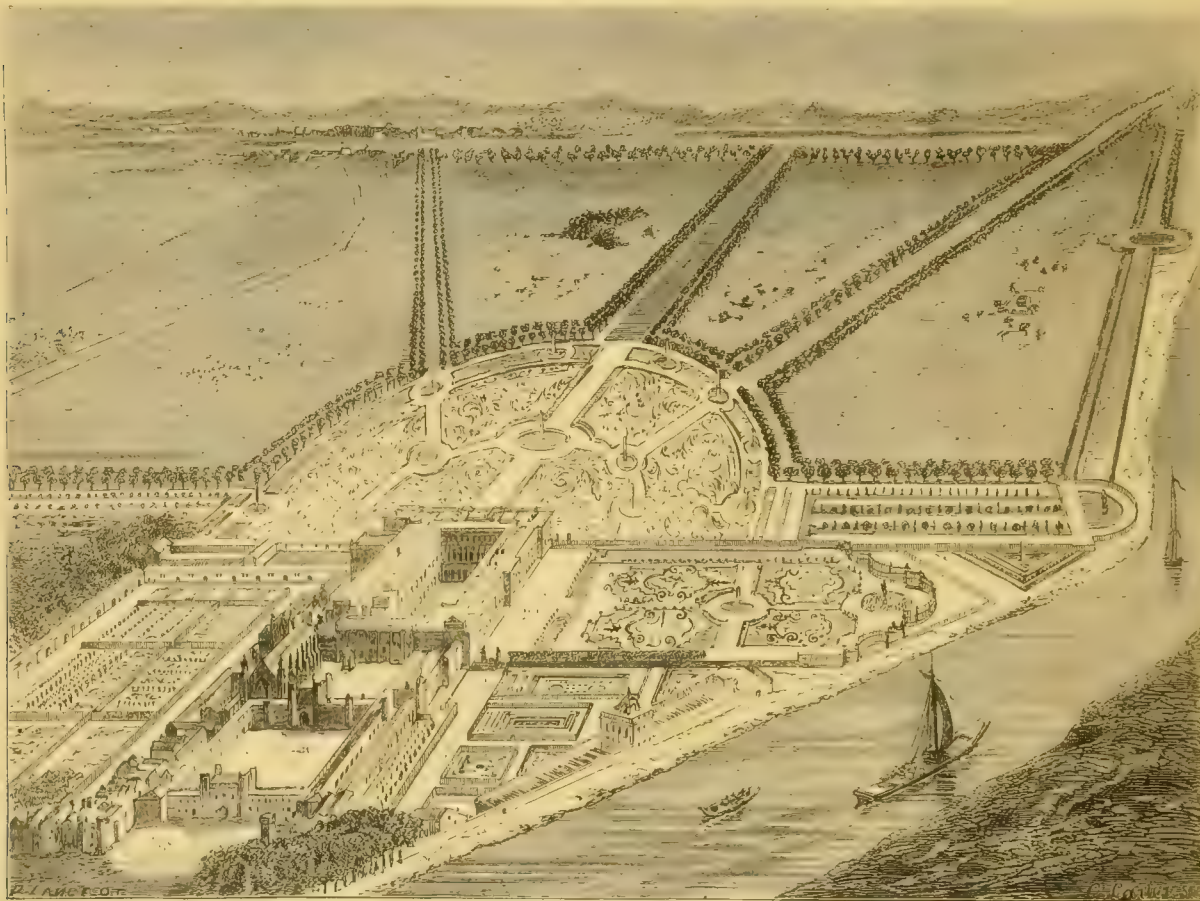
THE GARDENS OF ENGLAND.

THE ROYAL GARDENS AT HAMPTON COURT.

HAMPTON COURT GARDENS are beautiful in spite of their geometry. They are a fine example in every line (shown below, as it was originally) of the old geometrical style of gardening. But, while they are, and we trust will long remain, an example of the school universally adopted before the natural idea of landscape-gardening began to take root, it is well to bear in mind that the old plan of torturing the trees into fanciful and unnatural shapes has been abandoned. Hence we have avenues of Limes glorious to see; had the antiquated *bêtise* of mowing them into walls, as now practised round Paris, been carried on at Hampton Court, we should have had little more to see than in any of those

that carelessly sprung from the base of the old terrace wall, than in any of the more carefully cultured bedding plants; and herewith furnish an engraving of a sketch, taken on the spot, of the Solomon's Seal (*Polygonatum multiflorum*), one of the most graceful of plants, and which should have a place in every garden. We had been accustomed to regard it as most fitting to adorn quiet shady walks and wild places; but here it is on the full glare of the terrace, just as lovely in effect as it would be anywhere else.

The annexed isometrical view of the Palace and Gardens of Hampton Court conveys a very complete idea of the laying-out of the place. There is, however, among many advantages, one disadvantage, in the isometrical system, as illustrating a general plan, which is, that full-grown trees, especially in a plan consisting of intricate parts, must necessarily be dwarfed in order not to confuse the perspective lines; and, therefore,



Hampton Court Gardens.

supremely dismal French gardens, such as that of Sceaux and many others, where the heavy walls of clipped Lime trees, hideous in themselves, steal every grace from the garden. Even the old Yew trees, allowed to free themselves from their old clipped form, and send their plummy branches forth naturally, are a great advance on the clipped tree of any kind, though they are so numerous at Hampton Court as to produce a somewhat monotonous effect. In those dreadful old shearing and clipping days, we believe they did not clip the flowers. Had they the modern flower-garden notion of pinching and clipping *Cerastium*, *Santolina*, &c., &c., into neat little hedges, it would have greatly increased their resources for formalism. On a recent visit to Hampton—now like all the great gardens round London, extensively adorned with “bedding plants,” very well done according to the standard in such matters—we found, as we thought, more beauty in an old English flower

the gardenesque beauty of the place is, necessarily, not done justice to. The great churchman and minister, Cardinal Wolsey, in selecting this spot for the erection of a palace, maintained the credit of his cloth by the choice of such a site. Our wealthy and powerful ecclesiastics have, ever since the firm establishment of Christianity, shown acuteness and good taste in the selection of some of the most lovely vales of fair England for the erection of their monasteries and episcopal residences, choosing, with taste and judgment, situations in which soft green slopes, a running stream, and noble woods, combined to give both beauty and value to their dwelling. The river gave them fish; the forest, game; the southern slopes of their open land furnished ground for their luxurious gardens as well as rich pastures for their cattle. Wolsey, one of the last of the race of those opulent Churchmen, erected one of the last of the great ecclesiastical residences at Hampton, not long before the Reformation. Shortly before the whole-

sale confiscations of the time, the noble riverside palace of the Cardinal had already fallen to the share of the king himself, and has ever since remained a royal palace, though not regularly inhabited by the royal family since the time of William III. It has been said that the portion of the gardens, known as the wilderness, is not in harmony with the rest of the laying out—that may be so—but it is yet very interesting from an historical point of view, as being a remaining part of the original plan of the Wolsey gardens. It was, in the Cardinal's time, quite customary to retain a part of the pleasure grounds in a state of nature; and such had, indeed, been the custom in baronial and royal, as well as ecclesiastical, gardens, from a very early period. In fact, nothing between an absolute wilderness, and a formal geometrical garden was then understood; for landscape gardening is a modern art. Our ancestors knew nothing of that gentle subjection of nature to somewhat smoother and more regular forms, freed from too much

out the enlargements of the palace in the Romano-Italian style of the day. The eastern terrace at Hampton Court is a noble walk, and perhaps the finest thing of the kind in Europe, the views from which, down the two diverging glades, are extremely pleasing. The isometrical plan, as has been said, conveys no idea of the effects of full-grown foliage trees, some of which are remarkably fine, especially a very noble Catalpa; but, as showing very accurately the mode of laying-out, the system is perhaps more useful, in some respects, than a picturesque one, which, however, it is intended to give on some future occasion. On the accession of William III., important alterations and additions were made, in which, of course, the Dutch style predominated, but it did not harmonise badly with those of the reign of Charles II. The Dutch King went in very largely for cropping and shaping; and there appeared, under the persevering efforts of topiarian skill, tree lions, tree elephants, tree peacocks, tree bears, and tree statuary—all shaven and shorn, into their



Solomon's Seal on the terrace at Hampton Court.

ruggedness and too much weediness, without making it formal. But the innate love of Nature was still there, as evidenced by the preservation of a portion of land, in a wild state, near the residence, so as to be conveniently accessible at all seasons; and where *la belle Chatelaine*, or my Lady Abbess could roam freely in coming spring, and watch, day by day, the first peeping of the Snowdrops through the winter-bronzed turf. In remote places, there is still many an old mansion, with the ancient appendage of a "wilderness;" though by far too many have been lopped and trimmed, and smoothed out of existence by modernising gardeners; and so, the wilderness of Wolsey, at Hampton Court, is at all events, an interesting relic of our old national style of romantic gardening, or rather of *leaving alone* a certain portion of the pleasure-grounds.

The semi-circular flower garden, spreading from the terrace of the eastern front, was planned in the reign of Charles II., probably at the same time that Sir Christopher Wren carried

respective forms, out of Yew, Rosemary, or Box. These innocent wild creatures were the delight of the King, who was a topiartist *pur-sang*, and was never tired of watching their forced growth into the desired shapes. Many of the devices remained, and were well kept up as late as Horace Walpole's time, who greatly admired their ingenuity, and has placed his *fiat* of approval on record. It is almost to be regretted that some remains of the Yew-tree bears do not remain at the present day—even at the risk of ill-naturedly caustic critics calling the place a "bear-garden." H. N. H.

A Noble Effort.—We understand, from a contemporary, that "the Royal Horticultural Society are entering into an arrangement with Messrs. Prince for establishing in the Royal Horticultural Society's Gardens at South Kensington a skating rink; it is confidently expected that this important addition to the attractions of the gardens will lead to a very considerable increase of the Society's funds."

THE FLOWER GARDEN.

SAXIFRAGES.

By J. C. NIVEN, Botanic Gardens, Hull.

The Opposite-leaved Group.

So remote in outward appearance are the representatives of this section to those of the preceding, that, in the absence of the flowers, it would be utterly impossible to recognise the relationship—the former with largely-developed leathery leaves, some 8 or 10 inches long, the latter with an altitude only to be measured by the decimal parts of an inch. Yet it is questionable if there can exist a more lovely and loveable plant than *Saxifraga oppositifolia*. The sectional title applied to this group by Tauchnitz, viz., *Porphyryon*, is perhaps as happy a one as ever was given to a plant embodying, as it does, the appellation used by the ancient Greeks for the purple or Tyrian dye. No one who has seen this Saxifrage in its Alpine habitat, with the vivid purple robe of Nature still impressed on the eye, as it must have been, but will at once acknowledge the correctness of the nomenclature, especially if it has been their good fortune to fall in, as I once did, with the major or larger variety. No words can express its beauty, no painter could commit to canvas the impression conveyed by viewing a large extent of heatherland suffused by the rich tint of this early spring Saxifrage. Long before the denizens of the heath have awakened into vital activity our purple mountain Saxifrages have paid their votive offerings at Flora's shrine, possibly the very first at their high altitude that have been presented, and, consequently, all the more acceptable.

S. oppositifolia of Linnaeus forms extensive patches of slender procumbent, many branching stems; the leaves, as may be inferred from the name, are opposite, broadly ovate, fleshy, obtuse at the point, and slightly reflexed, with a single pore or hole inserted in the flattened extremity; the margins are ciliated with bristly hairs, somewhat deflexed downward, they form an exceedingly pretty object under a moderately powerful glass, each little branchlet simulating very perfectly an obtuse leaved Aloe; the flowers are solitary on short peduncles, about the size of a three-penny piece, and, as before stated, of a rich purplish-crimson colour; the petals are obovate, slightly unguiculate, and five-nerved. This charming Saxifrage appears to possess a world-wide geographical range, at least, throughout the northern hemisphere, from the Sierra Nevada to Spitzbergen, on nearly every mountain height; eastward through Siberia, even to Thibet, and westward through Greenland and Labrador, as far as Unalashka, it has no equal in this respect amongst all the Saxifrages.

S. oppositifolia var. *grandiflora* of Engler is more familiarly known in this country as the major variety, it has broader and more densely arranged foliage, its flowers have obovate petals, distinctly unguiculate and seven-nerved, they are fully double the size of the normal type, and possess a richer and deeper colour as well. This form, said by Engler to be Pyrenean, is also met with in Britain, though but rare.

S. oppositifolia var. *alba*, though not mentioned by Engler, has been for many years in cultivation in this country, besides being at once distinguished by its pure white flowers, it has a markedly slender growth as compared with the others; owing to the leaves being further apart the dark red colour of the tiny stems is rendered conspicuous; so distinct is the plant that, in the absence of the flowers, it may readily be picked out from among any number of the other varieties. What its origin is I know not, I have never met with it wild, nevertheless, it is quite possible it may be a casual sport picked up on some of our British mountains.

S. oppositifolia var. *pyrenaica* has a good deal the appearance of an intermediate form between *oppositifolia* and *biflora*; its leaves are far less fleshy than those of the former, larger, more densely ciliated, and not abruptly shortened at the point; the flowers are of a pale rosy tint, hence it not unfrequently goes by the name of *pallida*. It is often mistaken for *biflora*, but, unlike that species, is essentially an early spring bloomer.

S. oppositifolia var. *Rudolphiana* of Hornschuck, is the most diminutive of all this section; the stems are densely abbreviated and covered with small leaves. I believe it is in cultivation with Mr. Maw, but I have not heard whether it has yet bloomed.

S. biflora of Allioni, is synonymous with *S. rosea* of Lapeyrouse, and was supposed by Willdenow to be but a form of *oppositifolia*. It is, however, a perfectly distinct plant, its general growth is stronger, the leaves larger, and further apart, not fleshy nor smooth, but pilose, or more correctly described as downy, especially on the

upper surface; the procumbent stems also are hairy, and altogether more lax in growth than any of the forms of the previous species. The flowers are produced from two to seven in number, in a sort of lax corymb, of a size about equal to that of the large flowered variety of *oppositifolia*, and of a deep rosy tint; its time of blooming is July and August, but this lateness may, to a great extent, be accounted for by the great altitude at which it grows, rendering it late in the spring, or even early in the summer ere it gets relieved of its winter's snow covering. Possibly to this very fact we must attribute the great difficulty which we find in its cultivation. With every chance of success, last autumn, offered by a supply of nice patches, just brought home by Mr. Maw from the Piedmont Alps, and planted in various situations, my only report is, that they are all dead. Since writing these descriptive articles, I have had a large correspondence with Saxifrage growers, and in every instance where *S. biflora* was reported as growing freely, it turned out to be only the pyrenaean form of *oppositifolia*. I will not, however, yet despair. I got a few pods of ripe seeds from the plants last autumn, and, from a spring sowing, there are at present half a dozen or more tiny plants, which may yet yield the elements of success; perhaps some of my readers may be able to throw some light on the subject. Our plant is a native of the Pyrenees and the Maritime Alps.

S. macropetala of Kerner is the name adopted by Engler for what we cultivate as *S. Kochii* of Hornung; or, perhaps, I should say, ought to cultivate, as I have very grave doubts as to whether the true plant is in cultivation. Those plants that I have had under that name from three different sources, have proved untrue; at least, they do not answer Engler's description in the matter of foliage and habit; neither of them have yet flowered, so, perhaps, I ought not to condemn them in too positive terms. The leaves of the true plant have a more dense arrangement than in *biflora*, the flowers are produced in corymbose clusters, varying from two to five in number, the stalks covered with glandular hairs, as also are the calycine divisions. Kerner's plant is said to be a native of the mountains of Switzerland, Carinthia, and the Tyrol.

S. retusa of Gouan, is known under the following synonyms—*S. imbricata*, *S. Wulfeniana*, and *S. scorbiculata*; but of all these, decidedly the most appropriate, is that of Gouan, which has been in use for many years. Considerably smaller, more compact in growth, and harder to the touch, than any of the preceding species in this section, it is readily recognised. The leaves are thick and fleshy, almost triquetrous, retuse at the point, and supplied with three distinct pores, or dots on the upper surface; quite devoid of hairs or ciliae, except at the base of the short petiole. Its flowers are produced sparingly, they are arranged in dense little groups of from three to five on a perfectly erect peduncle, about an inch in height, and present the appearance of a little group of intensely bright crimson stars; though, far from being as showy a plant as the forms of *oppositifolia*, it, nevertheless, possesses a charm of its own, and were it only a more abundant bloomer, it would become a formidable rival. It is a slow grower, but possesses a good vigorous constitution, and is equally hardy with the others, but requires a locality in the rockery, where thorough drainage can be had, and also, full exposure to the sun; the texture of the soil should be rendered free and open by an admixture of small nodules of granulated limestone, amongst which its little wiry roots delight to revel. It is most impatient of watering overhead, when succeeded by a bright sunshine. Two-thirds of a fine panful of this plant has become withered and brown in the course of a few days after this operation, which, is one to be avoided at any time, but especially is it the case with this plant. Its geographical range appears to be very similar to that of *biflora*, except that it extends farther eastward on the European Alps.

THE NEW GLADIOLUSES OF 1874.

M. SOUCHET, the successful raiser of many of the finest hybrid Gladioli, has been compelled through failing health to relinquish his favourite business; and henceforward the task of upholding the fame of the establishment will devolve upon his successors, Messrs. Souillard & Brunelet, whose novelties this season are eighteen in number, all of which are first rate. From these we select the following:—

Amalthee, a fine variety of moderate stature bearing a splendid spike of large, pure white flowers with broad patches of a rich violet-red; throat, violet velvety; anterior divisions of the perianth, slightly shaded with lilac.

Belladonna, a fine spike of well set white flowers shaded with bright lilac, the lower division marked with slender bright carmine stripes. Shape of the flower very peculiar and quite new.

L'Unique Violet.—Spike, very long, bearing unusually large dark lilac flowers tinged with violet, and flamed with deep carmine. A vigorous grower and of perfect habit.

Variabilis.—Spike, long, flowers extra large, pure white, spotted or not, and sometimes dashed with lilac; bottom of the throat violet. An exceedingly effective branching variety.

Merveille.—A very beautiful rose-cerise, faintly shaded with violet bordered and flamed with deep carmine; centre, very bright.

Psyche.—A magnificent large spike of delicate rose-coloured glazed velvety flowers, the inner divisions of a deeper rose, flamed with bright carmine. Unrivalled in form and colouring.

Arethuse.—A fine spike of perfectly formed delicate white flowers, faintly tinged with pink and striped and flamed with bright carmine.

Murillo.—A magnificent spike, bearing beautiful bright cerise-red flowers of extra size, all the divisions banded with pure white, and the lower ones almost altogether white. A first-rate variety.

Le Vesuve.—An extremely long spike of beautiful brilliant fiery-red flowers, very large and effective. A late strong-growing variety.

De Mirbel.—A large spike of extra large perfectly shaped widely-expanded handsome rose-coloured flowers, slightly tinged with violet or lilac, ground very bright, striped and flamed with deep carmine.

Asmodee.—A very beautiful spike of cerise-red or bright purple flowers, bordered and flamed with a rich garnet-red, spot and very broad rays, white. A very distinct variety.

Le Tintoret.—A very long and handsome spike of fine open flowers of a beautiful cerise, flamed with carmine near the edges, and with a carmine spot upon a yellowish ground. A strong-growing variety.

To the foregoing dozen unrivalled varieties, we may add the following six, which are scarcely inferior in point of form and colour.

Ondine.—A long spike of perfectly disposed white flowers shaded with lilac, each division furnished with a small deep violet blotch, and faintly dashed with very bright carmine near the edges.

Albion.—A very large spike bearing handsome white flowers of unusual size, faintly and delicately tinged with lilac and sometimes flamed with lilac-carmine. An extra tall variety.

Triumphans.—A very large and beautiful spike of cerise flowers, admirably set.

Cassini.—Extra large spike of perfectly arranged beautiful rose flowers flamed with carmine, lower divisions elegantly striped with carmine on a very bright ground.

Ambrose Verschaffelt.—A splendid spike of perfectly formed pink and white flowers, flamed with garnet-red, divisions with a large rose spot. An exceedingly effective variety.

Sirene.—Delicate clear bright rose, slightly tinged with orange and broadly rayed with red on the lower divisions, spot red on a yellow ground.—*Illustration Horticole.*

The Distribution of Alpine Plants.—M. De Candolle, at the recent Congress at Florence, explained that the pre-glacial Alpine flora was not able to exert a great influence on the existing flora, inasmuch as the great changes which took place during the glacial period had necessarily swept away this ancient vegetation. He could not agree with those who considered the Alps as a centre of diffusion of a special flora, but believed them rather to be the refuge ground for the plants, which, as the glaciers retired, had found conditions more favourable to their existence than in places lower down. In proof of this, he observed that the richest parts of the Alps for rare plants are those which were soonest deprived of glaciers, the ground having been thus cleared for the introduction of a more ancient flora, of which these rare plants are remnants. The southern, the eastern, and the western slopes of the Alps were successively cleared of the principal glaciers, and the Swiss Alps received their flora first from the south, and then from the east and west. M. de Candolle then asks, "Why should the plants ascend as the glaciers retreat, and why should there be greater variety in this advancing vegetation?" In pre-glacial times there was more moisture in the climate of Europe, and, consequently, the flora was richer and more varied. After a time, the climate became dryer, and, as the glaciers retired, many plants were able to maintain themselves, by advancing gradually over the ground as it became unoccupied by glaciers, finding there conditions more favourable for their growth. Hence one can deduce the law that the richness and variety of Alpine floras depend on the antiquity of their introduction. Mr. Ball approved of M. De Candolle's theory to a certain extent, but he did not consider it sufficient to explain all the facts. When, for instance, a rare species is to be found in more than one locality, it is natural to suppose that formerly it had occupied all the intermediate ground, and that the glacier coming through the midst of it had divided it into two groups. He was also unable to understand

how M. De Candolle's theory could explain the fact of certain plants growing vigorously in limited spots without extending their area, and was inclined to attribute this limitation to the nature of the rock, its chemical properties, &c.—serpentine, for instance, almost always supports a peculiar vegetation; thus the Engadine Valley, which must have very recently been freed from glaciers, is remarkably rich in rare plants.

Grass Walks.—To these there are a few drawbacks. It is said of Grass walks, "They are always green and pleasant to the feet, never wet, and much less troublesome than gravel walks." With respect to the appearance, I think a well-kept gravel walk does not look worse than a Grass walk, but, on the contrary, helps, by means of contrast with the green lawn, to make a garden look much more pleasant than it otherwise would do. It may be, that a gravel walk gives, in the beginning, a little more trouble than Grass, but, if well constructed, the trouble will be afterwards, if not less, at least not more than with Grass walks. I really never did see a well-constructed gravel walk muddy. One cannot enjoy a garden with Grass walks on a fine morning without getting wet feet, the Grass being damp with dew, neither is it possible to walk over Grass after a refreshing rain from the same cause, and thus one is deprived of the enjoyment of one's garden just when it is most desirable to take a walk in it. On the contrary, well-constructed gravel walks are always dry and pleasant to the feet, and I am sure, as I have said, will not give more trouble than Grass walks, which, if not mown very often, will become quite impassable, and serve as a retreat for snails and other insects.—G. WERMIG.

Plants Suitable for Draping Trees.—The common red-berried Bryony (*Bryonia dioica*) would make a suitable plant with which to drape trees. It is a graceful climber, and, as it does not ripen its fruit until autumn, its beauty would last for a considerable period. It is found in most parts of Europe, but, although common in England, in Scotland it is considered rare. Its favourite habitat is a hedge or thicket. I met with it last month in a shady Hampshire lane, one of those charming spots where the Hazel and Beech-clad banks, rising high on both sides, form a complete arbour. The Bryony was in full bloom, and its slender stems, numerous tendrils, large alternate Vine-like leaves, and delicate creamy-white flowers, beautifully marked with green veins, formed a very pretty picture. Draped round one of those old trees, to be found occasionally on lawns which are not of modern date, it would, I am certain, be a "thing of beauty," when its green berries had become red or bright orange, though not "a joy for ever." I am very partial to berries for winter decoration, although some of my special favourites bear rather a suspicious character, to which the Bryony itself is not an exception, for most authorities are of opinion that the fruit partakes of the poisonous properties of the root. There is another plant, somewhat similar to that just named, called Black Bryony, but which, in reality, is not a Bryony at all, but the common *Tamus* (*T. communis*)—also, a red-berried plant, which has long twining stems and a black root. The roots of *Bryonia dioica* are white, and were, in former times, believed by the Welsh, the lower classes at least, to be real "Mandrakes;" for herbalists used to obtain a very fair resemblance to the human figure from the roots of a thriving young Bryony plant by opening the earth round it, and placing the roots in a small plaster mould. They then carefully replaced the soil, and, by the end of the summer, accomplished their task, for the roots grow quickly, and, in most instances, assumed the form of the mould.—W., *Berry Grove, Liss, Hants.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Campanula Smithi.—You say (p. 62) that this is a hybrid between *C. Hostii* and *C. pulla*; it should have been between *C. fragilis* and *C. pumila alba*.—WILLIAM SMITH, *Wilmot Road, Leyton.*

Why Not?—Parsley properly belongs to the vegetable garden, but it makes a beautiful edging for flower beds, the bright green of its finely curled leaves giving a pretty finish to flowers that lack foliage. I am bold enough to use it thus and find it very effective.—R. N.

Madaria elegans.—Among the numerous members of the Composite order introduced into our garden, this hardy Californian annual deserves, I think, a word of commendation. It grows 1 or 2 feet in height, and bears narrow entire downy leaves, and lax-terminal cymes of showy pale yellow flowers nearly 2 inches in diameter. The ray florets are deeply three-lobed at the apex, and marked at the base with a red-brown spot. It is a plant that flowers well in the shade.—R. C.

The Best British Ferns.—Would you be good enough to give me a list of names of a dozen of the rarest and best British Ferns, such as would win in a good exhibition of them?—CRISPUM. [*Athyrium filix femina* Victoria, *Athyrium filix femina plumosum*, *Scolopendrium vulgare crispum latum*, *Scolopendrium vulgare digitatum*, *Adiantum Capillus Veneris*, *Allosorus crispus*, *Lastrea filix mas cristata*, *Lastrea dilatata cristata* Wollastonii, *Osunda regalis*, *Polypodium vulgare cambricum*, *Polystichum angulare*, *Polystichum angulare Jonesii*, *Trichomanes radicans*, *Asplenium marinum*, *Polypodium Dryopteris*. The above are very beautiful when well grown, and are often met with at exhibitions. They are all British, and hardy.]

THE KITCHEN GARDEN.

COTTAGER'S KALE.

FROM the time that has elapsed since this vegetable was first brought under public notice, one might have supposed that it would have been more generally cultivated than it is. When first offered it received a very high character, not only for free growth, great weight of crop from the ground occupied, hardness, enabling it to withstand the severest winters, but, above all, for its fine flavour. This high character has been fully borne out, and still we find numbers of gardens, in which this, the best Kale in existence, is not grown, and the place in which it should be found occupied by Scotch Kales, which are much inferior to it in flavour, and not superior in their power to withstand severe frost. The first season in which it was "let out" I grew it; but at the time of planting I noticed that there was a considerable difference in the plants, some being green in the stems, like ordinary Kale, others having more or less a purplish tinge. I at once concluded that the seed had not been carefully saved—that is, the seed plants had been, when in flower, growing too near some other of the Brassica family in bloom. Subsequent experience proved that in this I was mistaken. In planting, the green plants were put on a separate plot from the purple ones, but were treated in every way in a similar manner. In any plant essentially of a decorative character, novelty of some distinctive kind is a sufficient warrant for its cultivation. Not so with a culinary vegetable, the legitimate use of which is to be eaten. Consequently, I submitted this Kale to the test to which, with me, new vegetables are always subjected, viz., comparison when cooked with the best established variety that admits of being tested with the new comer. On this occasion, late in the autumn, I had Brussels Sprouts, Walcheren Broccoli, and the purple and green varieties of the Kale, cooked separately; also the two forms of the Kale cooked together. The verdict of myself and several friends was, that the green form was very much inferior to the Brussels Sprouts both in flavour and texture, being tough and stringy, and that when cooked with the purple completely destroyed the flavour of the latter, as well as gave the whole a disagreeably strong character. This mixture of the purple and green forms has doubtless had the effect of depreciating the value of this vegetable, for the purple, when cooked separately, was as different as could be, being as tender as Spinach, with a flavour more like that of Walcheren Broccoli than the Sprouts; the latter only surpassing it in appearance. From that time I have always grown this Kale as a crop to succeed Brussels Sprouts, giving up the Scotch Kales altogether, except a dwarf variety that is the latest of all in running to flower, and which bridges over the time from the end of the winter Greens until the first early Cabbage comes in. From the impression I had first formed respecting the seed plants being improperly managed, I determined to save my own, selecting nothing but purple-stemmed plants; kept them completely away from any other of the Brassica family, and, when in bloom, carefully covered them with hexagon netting, that effectually excluded bees and flies, yet the seed from these purple plants so treated produced as many green plants as of the colour wanted. The practice I have followed from that time has been simply in planting to reject all green plants, only using such as had the unmistakable purple tinge in the stems. To secure a full heavy crop it is not necessary to sow the seed as early as in the case of Brussels Sprouts, yet it should be in the ground by the middle of April. The land should be well prepared by a good dressing of manure, dug in not too deeply, for this, like all others of the Cabbage tribe, is a surface rooter; and, although all the family prefer a heavy, strong soil, still it should always be well pulverised so that the roots can extend in all directions without the obstruction of big, hard, unbroken lumps, that alike offer resistance and afford little nutriment to the tender feeding rootlets. An opinion sometimes exists, that in the preparation of ground for culinary vegetables, if a sufficient quantity of manure is dug into the soil within the distance that the roots of the intended crop will extend, this is all that is required. Such is by no means the case. The limited season that most culinary vegetables have in which to arrive at maturity necessitates the whole of their manurial food being evenly dispersed through the soil in which their roots extend; so that, from the day the young plant appears above ground until it is fit for the cook, it may have had all along a continuous supply of the necessary food. This cannot happen unless the manure is evenly dispersed through the soil, which is an impossibility unless, in digging, the ground is broken sufficiently fine, so as to admit of the equal dispersion of the manure. This, as will be obvious, is of less importance in the case of any plant that requires years to come to maturity. If space can be spared, the plants may be at once put out from the seed-bed, when large enough to handle, or they may be pricked out about 9 inches asunder, until some other crop is cleared

off to make way for them. A few words respecting this preparatory process may not be out of place. The freest-rooting plants in existence have need of all the roots they make; consequently, in transplanting even so common a vegetable as a Cabbage, it is essential to preserve as many of the roots free from mutilation as possible; yet, how often are these and other plants treated as if their roots were of little or no importance! As regularly as the seasons come round there is the recurring lament over Lettuce prematurely running to seed; Celery and similar things bolting. Can it be wondered at when, in taking up for re-planting, they are simply dragged out of the ground like weeds, three-fourths of their roots being ruthlessly torn off? Of the bad results arising from this barbarous work it is difficult to speak too forcibly. The necessity of using a trowel when planting, or of loosening the plants with a fork, so as to retain all the roots possible, may be insisted on, and yet not be always carried out by one's workmen. If anyone is doubtful as to the effect it has upon the crop ultimately, he may be convinced by simply noting the difference there will be all through the after-growth of any given crop, a portion of which is removed with all their roots intact, as compared with another portion torn up weed fashion. In preparing a nursery bed for this Kale, and all its congeners, the surface on which the soil is placed should be composed of as hard a material as can be got, so that the roots of the plants cannot penetrate into it; and the 6 or 8 inch of soil placed thereon, in which they are pricked out, should be thoroughly pulverised before the plants are put in, so that when removed they will come away with nearly all their roots entire. The plants in the nursery bed should never be over-crowded—9 inch each way is a good distance; when they are well cared for, and assisted with water when they require it, good crops can be obtained, even when they are removed to their ultimate destination in the garden—later in the season by some weeks than would be of any use in attempting with badly prepared plants—this is an advantage, more especially where space is limited. Cottager's Kale, like all other vegetables intended to stand the winter, should not be planted too thickly; the weakening influences of over-crowding show themselves, and render plants unable to resist an amount of cold that they would have withstood without injury, if they had had room sufficient for light and air to give them their wonted strength. If the plants are put out in the quarters where they are to remain, as early in the spring as they are large enough to handle, they should be planted 2 feet asunder in the rows, and the rows should be 2 feet 6 inches apart; if planted later in the season from the nursery bed, 2 feet each way will be sufficient.

T. BAINES.

Sea-weed and Sea-sand in the Culture of Seakale.

—Permit me to suggest that those of your readers residing near the sea-shore, who cultivate Seakale, should make use of both sea-sand and sea-weed if they desire to obtain really fine, yet delicately-flavoured crops. The name *Crambe maritima* points to the natural habitat of the plant, which is found in a wild state on different parts of the coast, growing upon shingle and sand. It was this which gave me the idea, now many years ago, of making use of sea-weed mixed with manure in the formation of Seakale beds, and of covering up with sea-sand such plants as I did not want to force, but cut from naturally. My Seakale, thus treated, was excellent, the Kale growing up through the sand being white, crisp, and free from any rank taste or smell. I planted a row of crowns in a bed formed of manure, sea-weed, and mould; and then in autumn, instead of covering with pots, I had a ridge of fresh sea-sand, nearly 2 feet in height, raised over the entire row. The Kale, thus treated, came in just as the forced row of plants was going out; directly the shoots began to peep through the top of the ridge, we removed the sand, and cut, from the crown, shoots very superior, in point of taste, to those of the manure-forced vegetable.—W., *Berry Grove, Liss.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

The Best White Cos Lettuce.—What is the best hardy white Cos Lettuce? —B. M., *Enfield.* [The best hardy white Cos Lettuce is Myatt's variety of the Covent Garden White Cos.—R. GILBERT, *Burghley.*]

A story is told of a citizen of Boston, U.S., who let a piece of ground to a man "on shares." The man wished to hire the lot, but the owner, doubtful of getting any money of the tenant, proposed to let it upon the promise of receiving half the products. Occasionally during the summer he passed the spot, and was pleased with the cultivation it was receiving, and with its goodly show of vegetables. Harvest time came and passed, and he heard nothing from his tenant till, in response to a hint, the latter sent him one Water-Melon and three shrivelled Cucumbers. Indignant at this treatment he called upon the man, and asked him what it meant. "Why, you see, squire," replied the tenant, "the boys stole all of your half of the crops except the Melon and Cucumbers which were sent to you."

GARDEN STRUCTURES.

A COMBINED HEATING AND FIRE-EXTINGUISHING APPARATUS.

A NEW heating and fire-extinguishing apparatus has been brought under our notice by Messrs. Smeaton & Co., horticultural builders, Fulham, which we think well worth the attention of householders and others interested in the preservation of buildings from destruction by fire. Messrs. Smeaton have just completed a contract, amounting to over £7,000, at Hertford House, for Sir Richard Wallace, who is anxious to ensure the safety of his pictures and other art treasures. The plan is a simple one, and consists of a hot-water heating apparatus and cold-water service apparatus, so connected by a system of self-acting double-action valves that the heating apparatus acts independently of the cold-water apparatus, and the latter independently of the former; while at the same time, should a fire arise, and the hydrants be opened at any one or more points, the valves come into instant action, and render available the whole of the water in both apparatuses, as also that which may be received from any external force from street mains or other supply; and further, should such force be greater than that obtained from the pressure exerted by the columns of water, the valves adjust themselves, and render the full amount of such extra pressure available. The advantage to be derived from the efficient action of such an apparatus

will be obvious; among them may be mentioned the certainty of having a large supply of water at command the moment an outbreak of fire is discovered, when frequently a few gallons ready to hand would be of more use than fire engines half an hour later. A good idea of the apparatus will be gained from the annexed illustration showing the section of a warehouse to which it has been applied. A is a hot-water cistern to act for service and expansion. B

—A cold-water cistern one or more of which may be used. C—Ball-cock and loop service to cold-water cistern. D—Safety expansion and circulating box in connection with hot-water cistern. E—Self-acting double-action valve, stopping the communication of hot-water to cold-water cistern, and opening to admit supply to heating apparatus. F—Cold-water services for general household or other purposes. G—Self-acting double-action valve to regulate supply and exhaust of cold-water cistern, by which the whole weight of water in the cisterns is available for the hydrants should the pressure be off from the main, while it prevents overflow if the pressure is on. H—Fire hydrants, of any number and in any position. J—Boiler of hot-water apparatus. K—Self-acting double-action valve preventing the cold-water passing into the heating apparatus whilst allowing the water in the heating apparatus to pass to the cold-water apparatus, and so become available for hydrants connected with it. L—Self-acting double-action valve retaining the whole of the water in the cisterns and pipes in case of the mains being emptied, or the pressure reduced below that exerted by the head of water in the cisterns. M—Cold-water service from street mains or other supply. N—Vertical service column to cisterns. O—Hot-water pipes, which may be fixed above or under the two floors and so arranged that they may be heated in sections or altogether as may be required. P—Vertical hot-water mains from boiler to safety expansion circulating box in connection with hot-water cistern.—*Building News.*

Raising Water.—I have two ornamental pieces of water, one 200 yards and the other 300 yards from the front of my house; would any of your readers be kind enough to tell me how to lift the water to the top of the house, otherwise than by hydraulic force? If a water-ram is anything to the purpose, would some one describe it?—F.

THE FRUIT CROPS.

METROPOLITAN AND EASTERN DIVISION.

Kent.—**Bridge Castle Gardens, Tunbridge Wells.**—Apricots, very scarce; Apples, fair crop; Pears, excellent; Plums, most abundant; Cherries, a capital crop; Strawberries, good, but did not last on account of want of rain and great heat; Peaches, an average crop; Gooseberries, good; Currants, plentiful; Filberts, scarce; Raspberries, plentiful and good; Figs, good, saved this year by being protected with nets in April.—J. RUSK.

—**Preston Hall, Aylesford.**—April and May frosts were more or less destructive to fruits in this neighbourhood; nevertheless, Strawberries are a fair crop; Currants, Gooseberries, and Raspberries, abundant; Apricots, Apples, Pears, Plums, Peaches, Nectarines, and Nuts, all very thin crops.—WILLIAM BRADLEY.

—**Chevening Park, Sevenoaks.**—Apples, Apricots, and Peaches, a quarter of a crop; Cherries, half a crop; Pears, Strawberries, Raspberries, and Gooseberries, good crops; Plums, a great crop; Walnuts, Filberts, and Damsons, a failure; Currants, good.—D. COE.

Hampshire.—**Heckfield Place, Winchester.**—Apples are, generally, a light crop; Apricots are a heavy crop; Cherries, especially Morellos, good; Peaches and Nectarines have not been so good for years; Pears are about half a crop, and will be small; Plums of all kinds, heavy, both on walls and standards; Currants, red, white, and black, very heavy crops and fine in quality; Gooseberries and Raspberries were never better; Strawberries, where not cut off whilst in bloom by frosts in the end of May, are very heavy crops; Nuts, almost a total failure. For blight of all kinds, for severe frosts in May and June, and for drought, this year is the worst I have ever known; yet, notwithstanding this, our fruit crops may be pronounced, upon the whole, satisfactory. Water has been used *ad libitum*, and Peaches, Nectarines, Apricots, and Pears, were well protected early in the season.—W. WILDSMITH.

—**Strathfieldsaye, Winchester.**—Fruit crops here

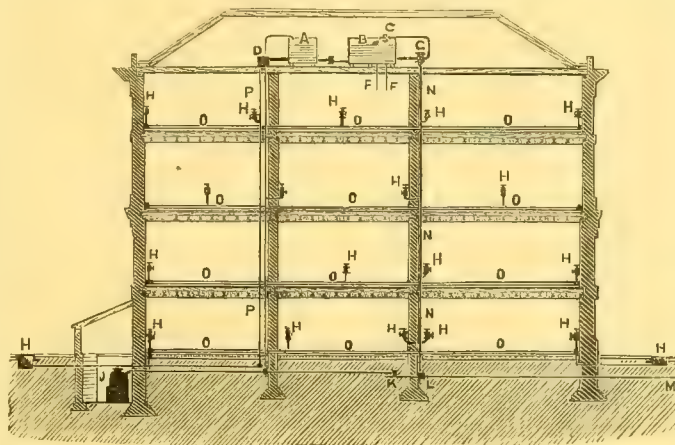
are somewhat variable. Apples and Pears with me are not quite half a crop; but, in some places in the neighbourhood, less liable to late frosts, I have seen very heavy crops of these fruits. Peaches and Apricots, all protected here with good

canvas coverings, are most abundant, and, strange to say, notwithstanding the most ungenial season I ever knew, the trees appear healthier than I have ever seen them for many years. On walls, Cherries and Plums are plentiful; but, on standards, an absolute failure. Of small fruits, Raspberries, have produced a heavy crop; Gooseberries and Currants, rather a light one. Strawberries have been sadly deficient and late, the frosty nights of May having destroyed all the earliest and strongest blooms, consequently we have not half a crop.—JAMES BELL.

Surrey.—**The Denbies, Dorking.**—Apricots, a partial crop; Apples, on espaliers, an excellent crop in some cases, on many standards not a fruit; Pears, abundant, and promise to be of excellent quality; Plums, on wall-trees a good average crop; under glass abundant; Strawberries, abundant, and of excellent quality; Cherries, moderate—trees much blighted; Peaches and Nectarines, a good average crop—trees much blighted; Figs, very few are grown here on the open walls; Currants, Gooseberries, and Raspberries, abundant, and good in quality; Walnuts, a good crop; Nuts, very plentiful.—JAMES DREWETT.

Berkshire.—**Royal Gardens, Frogmore.**—Apples, partial, say about an average; Apricots, heavy crop and good in quality; Cherries, plentiful; Currants, good; Gooseberries, abundant; Pears, a fine crop and clear from smut; Plums, plentiful; Peaches and Nectarines, good crops and apparently of excellent quality; Raspberries, fine crop, but suffering from heat; Strawberries, light and of short duration; Walnuts, below average, killed by spring frost.—THOMAS JONES.

—**Coleshill, Shrivenham.**—Apples, thin—say about half a crop; Apricots, plentiful; Cherries, a fair crop, but very much



Smeaton's heating and fire extinguishing apparatus.

spoiled by late frosts and black fly; Currants (red), thin and small, (white) good, fine, (black) abundant and large; Figs, plentiful; Gooseberries, good and of fine size; Mulberries, plentiful; Nectarines, a fair crop; Peaches, plentiful—trees much blighted and sickly; Filberts, scarce; Pears, some early kinds plentiful, but late kinds very thin, having suffered much from late frosts; Plums, scarce, with the exception of Damsons, which are plentiful; Raspberries, plentiful, but small; Strawberries, about half a crop, and not nearly as fine as usual, the first blooms having been cut off by late frosts; Walnuts, very thin.—HENRY ECKFORD.

SOUTH-MIDLAND DIVISION.

Huntingdonshire.—Ramsey Abbey.—As far as regards quantity, our fruit prospects are most favourable; but the prolonged drought has had a bad effect upon both size and flavour, and, as might have been expected from the character of the season, insects have been more than usually troublesome. Apricots are an excellent crop; in fact, on an east wall they set much too thickly, and many had to be taken off. In a difficult season like the present, there is a considerable advantage in having trees in different aspects. I believe, indeed, that in some places Apricots would do well in a north aspect; I intend trying them there, with the view of prolonging their season. The blossoms also in a severe spring would probably escape injury from frost on such an aspect. Peaches and Nectarines are a moderate crop, and in this scorching weather, in the full glare of the sun on a south wall, even when heavily mulched and water freely used, it is difficult to keep the trees free from red spider and in good growing condition; Plums and Cherries are good but small; Gooseberries, Currants, and Raspberries are abundant, but smaller than usual; and the same remark is also applicable to Strawberries, which are, moreover, somewhat deficient in flavour; Apples are a fair crop, but small; Pears are thin, so also are Nuts of all kinds.—E. HOBDAV.

Hertfordshire.—Moorpark.—Apples, moderate, owing, doubtless, to the sharp frosts which occurred during the blooming season; Pears, fair crop; Plums, heavy crop; Strawberries, abundant on plants forced last year and planted out 3½ feet from row to row, and 18 inches asunder in the row, the ground being trenched 3 feet deep; Cherries, May Dukes, Bigarreus, and Early Sweet Cherries on walls, good crops; Morellos, very much attacked by black fly; crop indifferent; Peach and Nectarines tree (out of doors) moderate, much blighted in the first part of the season, clean and good in Peach-houses and orchard-houses; Figs, not a good crop; Gooseberries, very heavy crop; Black and Red Currants, good; Raspberries, soon over, owing to the dry and hot weather.—D. CUNNINGHAM.

Oxfordshire.—Great Tew, Eustone.—Red, White, and Black Currants, Gooseberries, Raspberries, and Strawberries abundant; Cherries, May Dukes and Bigarreus, a full crop; as are also Plums of all sorts; Pears, an average crop; Apples, about a quarter of a crop; Apricots, none; Peaches and Nectarines, very few; in our orchard-house full, as usual; we, therefore, feel the comparative loss of out-door crops the less, and can have always plenty of dessert for nine weeks, from the end of July till the beginning of October.—A. MACFARLANE.

Buckinghamshire.—Wycombe Abbey.—Apricots, a good average crop; Apples, a fair crop in some places, in others scarcely any; Pears, abundant; Plums, plentiful and good; Strawberries, the earliest and largest fruits destroyed by frost, crop good, but has suffered in many places from want of rain; Cherries, in low situations, very abundant and fine, on high-lying ground, small; Peaches and Nectarines, good crop; Figs, a fair crop; small fruits, abundant and good; Nuts, not plentiful; Walnuts, plentiful in some places, scarce in others.—G. T. MILES.

Northampton.—Castle Ashby.—Apples, in the garden here, a total failure, owing to the bloom having been all destroyed by spring frosts; Pears upon walls, a medium crop, but we have no fruit upon pyramids, of which we have a fine lot of well furnished young trees; upon young espaliers, there is a nice little crop; Plums, abundance of all kinds; Peaches and Nectarines, very few, trees suffered from cold and frost after having made their young growth, also fearfully infested with greenfly, which, to keep in check, requires a considerable amount of labour and attention; Morello Cherries set abundance of fruit, and all went well with them up to the stoning season, when they failed to perform that process; consequently, they dropped off, and are now a very poor crop; Currants, red, average crop; black, very inferior; Gooseberries, average crop, but inferior in quality; Raspberries, very bad indeed, the frost and cold nights in May having completely paralysed the young growth, from which they have not yet recovered; consequently, they have produced small pea-sized hard bits of fruit, and the canes are now in a semi-lifeless state; Apricots, very satisfactory, having been well protected during the severe frost of April and May by means of temporary covering;

Figs on walls, a few; Cob Nuts and Filberts, none; Walnuts, a few. With the exception of a few Horse Chestnuts, we have seed on no other forest tree on the place. This season will be recollected by all connected with horticulture as a singularly unfavourable one.—GEORGE BEECH.

—**Burghley, Stamford.**—Plums, particularly Greengages, an excellent crop; Peaches, half a crop; Nectarines, half a crop; Strawberries and Gooseberries, full crop; Currants, abundant; Figs, scarcely any; Nuts, very scarce; Medlars, full crop. These remarks relate to outside crops; but inside, Peaches and Nectarines are very fine, thus showing the desirability of growing such fruits in cool houses. Our third house (just in) contains Peaches measuring 10 inches round. Strawberries have not more than half come to perfection, in consequence of the dry weather. We have only had occasional slight showers since April. Apples are a short crop in this locality, and Pears, in some places, are a full crop, while in others they are very thin.—R. GILBERT.

WEST-MIDLAND DIVISION.

Worcestershire.—Witley Court, Stourport.—Up to May, seldom had we seen a greater promise of an abundant fruit crop of all kinds than this year. The previous summer and autumn having been favourable for the ripening of the wood, and the early part of this year all that could have been wished, there was the greatest possible profusion of bloom, which, however, got damaged by the bitterly cold and frosty weather that set in with May and continued throughout that month and June. Fruit trees, too, suffered severely from the persistent attacks of legions of aphides and other insects. Apricots are, therefore, but an average crop, even where thoroughly protected; upon cottage walls, they have suffered severely from frost, and are very scarce; Apples, half a crop, except in the case of trees in high-lying positions, on which the crops are, in some instances, heavy; the trees have suffered much from blight; cider Apples, very partial; Pears, scarce and partial, early blooming sorts best; Plums, scarce and very partial; we have average crops of Damsons, but they are by no means general; Strawberries with us have been a good crop, but generally they are light and partial; in some districts the bloom was caught by spring frost. We have an abundant supply of water, which has been of great service to Strawberry crops this season. Our best cropping sorts have been—President, a great bearer; Lucas, first-class in flavour, a good bearer, and a kind that carries well; John Powell, a free and useful sort; Dr. Hogg, fine in size and of first-class quality; Sir J. Paxton, and Mr. Radclyffe, a good strain of British Queen. Of Cherries upon walls, such as Morellos, there are full crops; upon standards, such as the Kentish, an abundant crop, but, in general, Cherries are a light crop, poor in size, and equally poor in quality; Peaches and Nectarines, on open walls, where protected, are fine crops, trees, too, clean and promising; Figs upon walls, an average crop; Gooseberries, full average crop; Currants, Red and White, under average; Black Currants, much blighted, and quite a quarter of a crop has fallen; Raspberries, full average crop; Walnuts, quite destroyed by frost; Filberts, half a crop, red-skinned by far the best crop. I may add that early Potatoes are fine, both in crop and quality, that late sorts are suffering from drought, and that I fear the crop will be poor, even should we now have rain.—GEO. WESTLAND.

Worcester.—Apples, partial; Pears, fair crop of early sorts, but not many of late kinds; Plums, rather scarce; Cherries, plentiful but small; Peaches, Nectarines, and Apricots, not many; Gooseberries and Currants, good crops, but blighted; Raspberries, plentiful; Strawberries, not abundant, fruit small.—RICHARD SMITH.

Gloucester.—Tortworth, Wootton-under-Edge.—So far, this has been a season of extremes, and against cold, heat, and drought, vegetation has had a constant and hard struggle; nor is there the least sign of such unfavourable conditions drawing to a close. Day after day the heat is so intense, that almost every kind of fruit tree is yielding to its effects. Should rain be delayed much longer our green crops will be a failure, particularly on shallow soils where water is scarce. In this neighbourhood, and, indeed, throughout the county, the rainfall has been very limited. We have not had much more than three days' rain since the middle of March, and none whatever since the 3rd of July, when we had just sufficient to discolour the ground; nevertheless, Peaches and Nectarines on open walls, in the majority of cases, are fair crops, and by constant attention to watering, the trees are in excellent health. Apricots are a total failure. Of Plums, we cannot reckon on more than a third of a crop; still, some varieties are bearing freely. The same may be said of Pears, with the exception of the earlier kinds, about which there is little to complain. Apples are a full crop, and, in many cases, a very heavy one; but, in low lying districts, they are a good deal below the average. Cherries at one time promised well, but three-parts of the fruit dropped during the stoning period, particularly in

the case of wall-trained trees. Strawberries are abundant, but to a great extent small and deformed. Bush fruits are abundant and highly flavoured, with the exception of Gooseberries, which have suffered from the intense heat. Nuts are plentiful, both cultivated and wild varieties.—ALEXANDER CRAMB.

Warwickshire.—Compton Verney.—Apples, very few; Pears, good; Apricots, average crop and fine; Peaches, good; Nectarines, average; Plums, heavy crop; Cherries, on walls a crop; Walnuts, killed by the frost; Strawberries, plentiful, but small; Raspberries, not good, want rain; Gooseberries, plentiful; Currants, fair crop; Nuts and Filberts, not grown; Figs on walls, average crop.—G. CRADDOCK.

Staffordshire.—Alton Towers, Cheadle, Stoke-on-Trent.—Gooseberries were a heavy crop, but they were nearly all cut off by frost on the 15th of June last; Currants, the same; Strawberries, abundant, but small; Raspberries, good, but suffering from drought; Apples, thin, say half a crop; Pears, pretty good; Cherries, plentiful, but small; Plums, good, with the exception of Damsons, which are thin; Peaches, thin, dreadfully blighted; Apricots, very good, but small. I may add that vegetable crops, including Potatoes, are generally good, with the exception of Carrots, which are very much blighted, but we are short of rain, and have had bitterly cold weather up to the end of June, on the 15th of which we had 4° of frost, and 10° on May 14th.—H. RABONE.

Keele Hall, Newcastle.—Apples, very thin; Pears, a good crop on standards and walls; Damsons, a good crop; Peaches and Nectarines, poor, very few grown on open walls; Raspberries, good; Currants, good; Strawberries, generally good, but small, owing to the continued dry weather; Cherries, good, especially Morellos on dwarf bushes, on which we find they bear better, and are less subject to insects, than trained as they usually are against a north wall; Gooseberries, good; Apricots, fair. We never remember so much blight—aphis, caterpillars, and honeydew—as this season. We are suffering from want of rain; in fact, we have had very little during these last six months, although this part is generally considered to have a wet climate.—W. HILL.

Willey Hall, Broseley.—Apricots, very good; Peaches, good; Nectarines, very good; Cherries, abundant; Apples, very fair; Pears, very good; Plums, very heavy crop; Filberts, moderate; Gooseberries, very good; Currants, good; Strawberries, very good, but small, owing to the dryness of the season.—W. H. WELCH.

Herefordshire.—Downton Castle, Ludlow.—Peaches, Nectarines, Apricots, and Plums, with us are good crops; Apples, about half a crop, being destroyed by frost and blight; Strawberries and Cherries, fair crops. On the Cherry orchards in this part of the country there was the finest blossom that has been seen for years, but most of it was destroyed by blight. Raspberries, Gooseberries, and Currants, about half a crop, having been destroyed very much by frost; Pears and Damsons are fine crops.—WM. LONDON.

Eastnor Castle, Ledbury.—Up to the beginning of May the fruit crops in this district were promising, Plums and Cherries having set thicker than I ever remember to have seen them. On the 9th of May and two following mornings we had very sharp frosts, which completely cleared our standards and pyramids of fruit, Rivers's Early Prolific Plum excepted, which appears to be one of the hardiest, as well as one of the earliest, varieties we have. On walls we still have a good crop, but the trees have been much injured by aphides, and they are now suffering from the extreme drought. Apricots, however, turn out to be a much better crop than was at one time anticipated, many of the latest blossoms having set and swelled after the prominent blooms were destroyed. Early kinds are now ripening fast, and the sweet-kernelled Kaisha is unusually fine and transparent. Peaches and Nectarines are a partial crop, the cold wet season of 1873 having been unfavourable to the formation and maturation of perfect blossom buds; indeed, it was by no means unusual this spring to find such shy kinds as Barington, Wallburton, &c., entirely without bloom buds, except in very warm situations. Aphides have been unusually troublesome, but where they have been kept in check, and mulchings have been attended to the trees are looking well. Cherries are a thin crop, and the fruit has dropped more than usual, black fly being very troublesome. Apples are very scarce and poor, except on elevated spots that were well sheltered from the north, and this being a great cider-making county even partial failure in the Apple crop is a serious loss. Pears are rather more promising, but the fruit is small, no rain having fallen to affect the roots since April. Bush fruit is plentiful and good, with the exception of Black Currants, which are badly blighted. Strawberries were much injured by the May frosts, and a continuance of dry weather, while improving the flavour, has seriously reduced the quantity and duration of this useful fruit. Raspberries fall below the average. Nuts are scarce. Walnuts partial; many of the trees were killed back when they had made

4 inches of young wood, and it was nearly midsummer before they showed signs of returning vitality. I may add, that up to the present time vegetables have been plentiful and good, but we may now expect a falling off. Potatoes are short in the top, look healthy, and promise a fair yield of medium-sized tubers of first-rate quality.—W. COLEMAN.

NORTH-MIDLAND DIVISION.

Leicestershire.—Cole Orton Hall, Ashby-de-la-Zouch.—Apricots, very light in this quarter; Apples, very good; Pears, very good on walls, thin on standards; Plums, unusually heavy crop; small fruits of all sorts abundant, but small from want of rain; Cherries, a very great crop; Peaches and Nectarines, both rather thin (were over-cropped last year); Figs, a good crop, but look as if they would drop off, owing to the excessively dry weather; Strawberries, plentiful, but small—half of the crop unable to swell, owing to the drought, which has killed many of the plants outright; Nuts, very few indeed.—M. HENDERSON.

Nottingham.—Wollaton Hall.—Apples are a light crop, having been much injured by frost in May; good dessert kinds will be scarce, although when in bloom there was every appearance of heavy crops; of Apricots there is a good average crop from late blooms, the first blossoms having been entirely killed—trees healthy; Peaches and Nectarines, light; during May the trees were much infested with aphides, but now they are doing well; of Plums there are good crops, especially of the better dessert sorts, but the trees were badly attacked with aphides early in the season; Damsons, very scarce; Cherries, good, but suffering from want of rain to swell them off properly; Pears, early and mid-season kinds, plentiful, late sorts scarce; Filberts, none; Walnuts, scarce, having been killed by frost; of Gooseberries there is a very heavy crop in the neighbourhood, but the trees are much infested with caterpillar; Strawberries, moderate, having been much hurt by frost, and dried up since; Red and White Currants, good crops and clean, Black scarce; Quinces, none.—HENRY GADD.

Lincolnshire.—Belvoir Castle, Grantham.—The crop of that most valuable of all hardy fruits, the Apple, is by no means a full one; indeed, I do not think that it can be called half a crop, and the drought may still lessen it. Late-blooming trees of large size and mature age afford the best crops. Amongst other sorts that have fair crops may be mentioned Bess Pool, Northern Greening, Caldwell, Blenheim, Herefordshire Pearmain, and Keswick Codling. Of Pears there is a very good general crop, especially on the most healthy and vigorous trees. Williams's Bon Chrétien, Marie Louise, and Louise Bonne of Jersey are very full. Of Plums there are fair crops of Victoria, Jefferson, and Golden Drop on walls. Standard trees generally have failed; but few Damsons. As regards Cherries, there are abundant crops of May Duke, Morello, and Kentish; but they are greatly injured by blight and drought. Of Peaches there is a moderately good crop—trees healthy. Of Figs, there is a very good show of fruit. Apricots, scarcely half a crop, a portion of the fruit having fallen owing to the dry state of the borders; Strawberries, very abundant, but small; Raspberries, a very full crop, but suffering from drought; Gooseberries, a very full and satisfactory crop; Currants (red), a moderately good crop, (black) rather small.—W. INGRAM.

Sudbrooke Holme.—Apricots, an average crop; Peaches, a failure—trees unhealthy through cold and fly; Plums, an average crop; Pears, Marie Louise, Winter Nelis, and Williams's Bon Chrétien are good crops, but all other sorts scarce; small fruits, such as Currants, Gooseberries, Raspberries, a full crop; Black Currants, scarce; Cherries, of all kinds, an average crop; Apples, in general, under an average, but in some orchards a good crop, though both these and Pears will be small this season owing to the drought; small fruits, in cottage gardens, scarce; every kind of crop is suffering from want of rain.—GEORGE MCBEY.

SOUTH-WESTERN DIVISION.

Cornwall.—Enys, Penryn.—Apples appear to be an average crop; Pears are rather above the average, but, judging from present appearances, will be small; Peaches and Nectarines, below the average; Cherries, about an average; Plums, kinds for preserving, below the average; other kinds, about an average; Figs, poor; Strawberries, a good crop, but soon over, owing to the drought. Bush fruits of all kinds, a good crop; Raspberries, good.—HENRY MILLS.

Dorsetshire.—Sherborne Castle.—Apples here are a very fair crop; Apricots, half a crop; Berberries, plentiful; Cherries, a fair crop for the neighbourhood; Currants, half a crop, very much damaged by the late frosts; Figs, moderate; Gooseberries, half a crop, damaged by the late frosts; Medlars, a fair sprinkling; Nectarines, in the open air, a very middling crop, and the trees are in a very

bad condition—indoors, very good; Nuts and Filberts, scarce; Peaches, a very middling crop, trees in bad condition; Pears, a moderate crop; Plums, plentiful; Quinces, a middling crop; Raspberries, very plentiful; Strawberries, very good, but small, owing to the drought; Walnuts, plentiful in some places. I may add that Potatoes are looking uncommonly well this season, a singular fact, when most other vegetable crops are suffering from drought. The Corn is looking remarkably well, but root crops are almost a failure.—W. G. PRAGNELL.

Devon.—Exeter.—Peaches and Nectarines, moderate; Apricots, below average; Plums, abundant; Pears, Apples, and Strawberries, average crops; Black Currants, below average; Red and White, average crops; Raspberries, good; Nuts and Filberts, abundant; Cherries, abundant; and Figs, scarce.—JOHN GABLAND.

Somersetshire.—Ashton Court, Bristol.—Apples are a good average crop, early kinds being more plentiful than late ones; Apricots, light crop; Cherries, plentiful, but much blighted; Currants, red and white, very fine and heavy crops; black, light and much blighted; Figs, generally good; Gooseberries, heavy crop; Medlars, every prospect of a heavy crop; Mulberries, good; Peaches and Nectarines, good on open walls (where protected in spring under glass), also large and well flavoured; Nuts, very light; Pears, good, and, for the season, remarkably clean and fine; Plums, poor and much blighted; Raspberries, good, but small; Walnuts, scarcely any; Strawberries, an average crop, which suffered much from drought. Fruit trees and crops generally are much blighted and greatly in want of rain.—JOHN AUSTON.

Merriott, Crewkerne.—We have here a fair crop of most kinds of fruit. Apples, in both gardens and orchards, will, I think, be a good crop, say half the quantity we had last year, which was just one half too much for the good of either the trees or the growers. Apples were nearly unsaleable, such was their abundance; but, thanks to railways, the "black country" and large towns absorbed a considerable portion, and the cider barrels, with some difficulty, held the rest. One thing this season, notwithstanding the adverse weather we had up to the end of June, trees generally look healthy and are covered with fine foliage, consequently, the quality of the fruit will be finer than it otherwise would have been, a circumstance which will make up for quantity. Pears grafted on the Quince are nearly a failure this season, while those grafted upon the Pear stock are loaded with fruit; it was just the reverse last season. Plums of most sorts, on open standards, are a good crop, in some instances weighing down the branches; I have noticed this season that the woolly and hairy-leaved kinds have resisted the frost better than the smooth and shining-leaved sorts. Cherries, especially May Dukes and Morellos, are bearing heavy crops, but we are sadly tried to know how to save them from blackbirds, through whose depredations we lose more than half our fruit crops. Gooseberries, Currants, and Raspberries are, and have been, abundant; Strawberries, owing to want of rain at blooming time, are only a partial crop. We have had little or no rain here for three months; we had a good fall at the end of June, but that on the 29th was accompanied by a thunderstorm, which, in a few instances, started the Potato disease. Field crops in this neighbourhood are very fine, and give great promise of an abundant harvest.—JOHN SCOTT.

Nettlecomb, Taunton.—Up to the last week in March fruit crops promised to be abundant, but April set in accompanied by cold easterly winds, and, occasionally, rain, hail, and snow until the latter part of the month, when we had a week or ten days of summer weather, which very much improved the fruit crops, and trees on walls were recovering fast. May, again, brought us cold easterly winds and sharp frosts at nights, and these unfavourable conditions continued, more or less, for three weeks in June. There was, however, little or no rain or the crops would have suffered much more than they have done; still, the cold frosty weather did much damage, both to fruit and vegetable crops; nevertheless, Apples are a good crop, particularly the better sorts; Pears, above an average crop; Plums, in some places, plentiful, in others scarcely any; Strawberries, where kept well watered, are a fair crop and of fine quality; Cherries, good and fine, particularly May Dukes and Morellos; Peaches and Nectarines, in some places, are a fair crop, in others, scarcely any; Apricots, here and there, are a good crop, where protected, otherwise indifferent; Figs, outdoors, abundant; Walnuts, scarcely any, trees much injured by frost; Filberts and Kent Cob Nuts, scarcely any; Quinces, none; Medlars, an average crop; Black Currants, an average crop; White and Red Currants, below average; Gooseberries, very good; Raspberries, in some places, an average crop, in others, much under average.—CHARLES ELWORTHY.

Wiltshire.—Wilton House, Salisbury.—Apples hereabouts are a bad crop; Apricots, a medium crop; Cherries, a fair crop; Currants and Figs good; Gooseberries, fair; Medlars, thin; Mul-

berries, trees much injured by spring frosts; Nectarines and Peaches good; Nuts, a fair crop; Pears, partial; Plums, abundant; Quinces, a light crop; Raspberries, thin; Strawberries, poor; Walnuts, bad. There was perhaps never a better prospect of fruit, of all kinds, than this year at the end of April, and perhaps it would be impossible to find on referring to reports of past years, a more destructive month than May proved to be this year; one favourable condition, however, was the almost total absence of rain, of which only $\frac{1}{2}$ inch fell in May. Had we received the usual amount with such frosts and bright sun, total failure must have been the result. Frosts occurred on fifteen nights in May, the most severe being on the 10th, 11th, 17th, and 18th, when the glass registered 6° of frost on the two former, and 4° on the two latter nights, but owing to the clear sky which prevailed throughout the month 12° of frost were frequently registered on the ground by the thermometer when exposed. A variation of 90° often occurred between the mid-day solar heat, and the minimum heat on the surface of the ground at midnight; on the 18th the solar heat reached 125° , and the minimum on the same day on the surface of the ground was 23° , a difference of 102° in twelve hours.—T. CHALLIS.

MIDLAND DIVISION.

Derbyshire.—Chatsworth, Chesterfield.—Apples with us are about a quarter of a crop; Cherries, on walls, a crop, but those on standards when in bloom suffered severely from frost; Currants, red and white, are a full crop, but black kinds suffered from the frost on May 16th; Gooseberries are about half a crop; Plums, none; Pears, a thin crop; Peaches, none grown out of doors here; Raspberries, half a crop; Strawberries, an abundant crop. The frost of May 15th was most destructive to Pears, Apples, and Plums; we registered 10° of frost on the 16th, and 9° on the 17th of May, and the cold winds, which blew from the north-east twenty-one days consecutively, were most detrimental to both fruit and vegetables, and considering that we had only 3.81 of an inch of rain between the 1st of March and the 12th of May, it has been one of the most trying seasons for outdoor gardening that I ever remember.—THOS. SPEED.

Osmaston Manor.—Apricots here are a good crop; Pears, very good; standard Apple trees are loaded down with fruit; Strawberries, very good and large; Cherries, excellent, both on standards and walls; Plums, including Damsons, a very large crop; red and black Currants and Gooseberries, heavy crops; Raspberries, good; Peaches and Nectarines, not grown out of doors here.—J. BOOTH.

Nottinghamshire.—Welbeck Abbey, Worksop.—Apple trees in this district produced an extraordinary abundance of blossoms, but spring frosts and insects have sadly thinned the crop, which can hardly now be called an average one. Pears, on standards, are likewise only thinly cropped; but on walls these are abundant. On a wired trellis, in the kitchen garden here, both Pears and Apples show very heavy crops. Plum trees furnished plenty of blossom, and the fruit escaped the ungenial weather in May and June better than Apples and Pears have done; very heavy crops of Plums are, therefore, now to be seen in many orchards. Cherries have been a fair average crop, and on north walls Morellos are abundant; Apricots, Peaches, and Nectarines, on walls, where protected, are abundant, and required a great deal of thinning; Raspberries and Currants are well cropped, but the fruit is small, having suffered from the continued drought in June. Legions of aphides have likewise attacked the foliage of Currants, so much that the bushes are nearly bare. Strawberries, where well attended to with watering, have produced excellent crops, and I find President, Sir J. Paxton, Lucas, Sir C. Napier, British Queen, Dr. Hogg, Frogmore late Pine, and Elton still the best varieties for general crops. No variety equals the Grovend, or Old Scarlet of some, for preserving, as it ripens early, and has a fine red solid flesh. Filberts and Cob Nuts are a failure here, but they are not grown in any quantity.—WILLIAM TILLEY.

Berry Hill, Mansfield.—Considering the cold spring and long drought which we have had, fruit crops, on the whole, may be set down as a fair average. Apples are a fair crop; Apricots, good; Cherries, a fine crop, especially Morellos, which are very heavy; Peaches, a good crop, but very late; Plums, very fine; Strawberries, abundant, but fruit small; of what are called small fruits, there are good crops; Walnuts, very thin, having been cut off by frosts; Filberts, also a light crop.—S. A. WOODS.

Lincolnshire.—Bloxholm Hall, Sleaford.—Apricots, abundant where protected; but, where unprotected, even on the same aspect, they were destroyed by spring frosts; Apples, a complete failure, only a few being observable in sheltered corners. The blossoms on Apple trees were plentiful and strong, and great hopes were entertained of an abundant crop, but, a succession of frosty nights occurring when they were in bloom completely destroyed them; Pears, some varieties an average crop, but, in general, under

average, and I am afraid that the quality will be indifferent; Plums, on open standards and bushes, a complete failure, but where protected on walls, a fair crop; Peaches and Nectarines, where protected, a fair crop, but the trees in some parts are very much blighted; Cherries, under an average, having been much destroyed when in bloom by severe frosts in May and June; Strawberries, a good crop and fine, but their season will be one of short duration owing to the hot dry weather; Figs, under average; Gooseberries, a fair crop, and of good quality, although they were very much injured in some localities by late spring frosts; Raspberries, abundant and fine, but will be of short duration; Red Currants, under an average, having been very much destroyed by spring frosts; White Currants, a fair crop; Black Currants, under average; Walnuts, variable, some trees having a fair crop on them, while others show none; in most cases the young shoots were killed by sharp frosts in May; Nuts, under average, not much grown here. The fruit season this year will be a memorable one. In spring we had an abundance of bloom, Apples, Plums, and Cherries, were completely covered. The month of April being mild, vegetation progressed favourably, but from the 1st May to the middle of June we had scarcely one night free from frost accompanied by cold biting east and north-east winds which have proved very destructive to fruit crops. On Monday the 18th May we had 12° of frost, Potatoes and Kidney Beans were cut to the ground and again on June the 12th we had 11° of frost, which again cut down Potatoes, Kidney Beans, and other vegetables. Pears, Apples, Cherries, and Gooseberries dropped in quantities from the trees, blighting all our hopes.—DAVID LUMSDEN.

NORTH MIDLAND.

Lincolnshire.—Aswarby Park, Folkingham.—Among Apples, Ribstons are a full crop, all other varieties about a quarter of a crop; Currants, red, white, and black, full crop, fruit of the black small; Figs, a full crop, fruit large and fine, several ripe fruit having been gathered from outside walls; Gooseberries, all growing on a north border, are a heavy crop, fruit very large; Apricots are a heavy crop, fruit large, changing colour fast; Mulberries, full crop; Pears on walls, half a crop; on trees, trained as pendulous standards, a full crop, having only missed a crop once in thirteen years; Nectarines, a fine full crop, foliage much blistered; Peaches, very poor, fruit of the Early Beatrice on a wall now ripe; Plums, quarter of a crop, suffered badly from late frosts, Rivers's Early Prolific now ripe. The rainfall between January and March has been 3.02, between April and June 1.36, while from June up to this time we have had none; everything in this neighbourhood is, therefore, suffering from want of rain. A large farmer near here has turned his stock into a field of Wheat, and my employer turned his lambs into a 40 acre field of Oats; in the village of Scredington, 2 miles from here, they have to pay 1d. for each bucket of water for domestic use; the laws here have not been mown for these last eight weeks; carpet-bedding is doing well here, but ribbon-bedding is almost a failure. Last week, our rector told his gardener to save all water, as it was likely to be wanted for domestic purposes, and to let the kitchen and flower gardens take their chance.—RICHARD NISBET.

Rutland.—Exton Park.—Apples and Pears are scarce in most gardens in this neighbourhood; Cherries are abundant; Peaches and Nectarines are a very poor crop, the frosts on the 10th, 11th, and 12th of March, when we had 12° and 5° of frost, caught them while in bloom and killed all the flowers, even when covered with branches and other kinds of protecting material; Strawberries are a good crop, but have suffered much from want of rain; President, Vicomtesse Héricart de Thury, and Elton Pine, have withstood the dry weather better than any other variety; small fruits are a splendid crop, Red and White Currants being larger and finer than ever we have known them to be here. The fruit is large, clean, and has ripened well. Black Currants are abundant, but very small. Gooseberries are a remarkably fine crop, and the bushes are clean and healthy; Raspberries, good but small, owing to continued hot dry weather; Filberts and Walnuts are very scarce.—J. SMITH.

EASTERN DIVISION.

Suffolk.—Culford Hall, Bury St. Edmunds.—Peaches and Nectarines on the walls here are carrying a moderate crop of fruit, but the trees have been greatly blighted. In orchard-houses the prospect of fruit is much better. Apricots are a somewhat light crop, but the fruit, which is nearly ripe, is remarkably fine and large. Apples, in the gardens here and in this neighbourhood, are as nearly as possible, a total failure, and any small portions of fruit which there may be, will consist of the most hardy culinary varieties; numbers of trees of the finer dessert sorts are here trained to a low flint wall facing the west, and they are carrying about half a crop. Both standard and dwarf pyramid Pear trees are here much the same as

Apple trees—nearly destitute of fruit; while, on walls, nearly all sorts are in great abundance, and it has been necessary to thin out the fruit to a considerable extent. Plums on standard trees are also a failure; even the Damson (which seldom fails here) has done so this season, while Greengages, Washington, and most other sorts trained to the walls are in great abundance, and have required thinning. Cherries—The only sort grown on the open walls here is the Morello, of which there is a moderately good crop; but they have been greatly infested with black fly. In the orchard-house the various sorts are abundant, and of good quality. Figs trained on the open walls are carrying a fair crop of fruit, which is likely to ripen. Grape Vines on the open walls show enough of fruit, which will, however, hardly ripen this season. Mulberry trees are carrying a light crop. Medlars are in great abundance; Quinces, very few; Walnuts, none; Filberts and other Nuts, a very light crop; Raspberries, abundant, and, considering the great drought which we have experienced, much finer than could have been expected; Gooseberries, in great abundance and very fine; Red and White Currants, abundant, and of excellent quality; Black Currants, light and inferior in quality; Strawberries, plentiful and good, but, on account of the dry weather, have not lasted long.—P. GRIEVE.

—**Wolverstone Park, Ipswich.**—Fruit crops in this district are very variable, and are suffering from want of rain. Pears on the Quince stock have set full crops, except in exposed situations; but a large percentage of the fruit is frost bitten and deformed, and, when rain comes, I fear a good many will split. Those on Pear stocks and trained on walls are more satisfactory, and, being deeper rooted, have not suffered so much from the dry weather. Plums are thin on standards; but, on walls, have set full crops. Many of these are now falling, and others are swelling very irregularly, owing to the tender fruit having been injured just after setting. Strange to say, Apricots passed safely through this trying ordeal, and have set full crops; while the trees are freer from gum than I have seen them for years. Peaches and Nectarines are very thin, and the trees have suffered severely from the constant checks to growth which they have had, and persistent attacks of aphides; indeed, I do not remember a season when the latter have been so numerous, or so difficult to eradicate as the present; Cherry trees are bearing fine crops, and the fruit is of good quality; Figs showed enormous crops, but the more tender kinds, such as White Marseilles, have all fallen off, while the dark kinds have retained a fair crop; Apples are variable, some kinds having set full crops, while others are very thin; wherever fully sheltered, the crops are up to the average, but the fruits are now falling, and will be small if we do not soon get a supply of rain; the crop of Strawberries has been most abundant, but, owing to the drought, the fruit did not swell to a large size; Gooseberries, Raspberries, and Currants are all heavy crops, but the latter are badly infested with green fly, and to escape an unusually heavy deposit of so-called "honeydew," I have had the tips of the shoots removed.—J. SHEPPARD.

—**Hardwicke House, Bury St. Edmunds.**—Apricots on walls here are between a half and a three-quarter crop; Plums, Peaches, and Nectarines, full crops in places; Cherries, all sorts, full crops here, in other places failures; Pears, a quarter crop; Apples, very partial, full crop on many trees, few or none on others; Mulberries, fine crop; Medlars, full crop; Nuts, partial; Gooseberries and Currants, full crops, and elsewhere entire failures; Raspberries, fine show, but suffering from late frosts and continued drought; Strawberries, fine crop, half a crop, and a complete failure, according to locality, latest sorts generally the best; President, Eleanor, and Elton, fine here; Keen's Seedling, British Queen, Black Prince, and old Scarlet, for preserving, almost a total failure; the whole of the early blossoms were blackened and ruined by June frosts. On walls I found glass copings most useful for Peaches, Nectarines, and Apricots. Trees under these are carrying good crops. Apricots protected by boughs on the walls, but under no coping, almost a total failure. The Impératrice Plum, too, is almost a total failure. Have other cultivators found its blossoms more tender than those of the Gages, Golden Drop, Jefferson, Victoria, Violette Hâtive, &c.? I almost forgot to add that out-of-doors Figs and Quinces are bearing capital crops.—D. T. FISH.

Norfolk.—Cossey Hall, Norwich.—Apples here are good, but in some localities only very moderate; Pears, on walls and espaliers, are a fair crop, but on standards deficient; Apricots are abundant, but in some instances the fruits are falling off through drought at the roots; Plums are good on walls, but bad on standards; Figs and Cherries are only a moderate crop; of Peaches and Nectarines there are fair crops, but the trees are infested with insects and blight; Gooseberries and Currants are plentiful; Raspberries, good in some parts, but in others they have suffered from drought; and the same remark applies to Strawberries; Filberts are a fair crop, but of Walnuts we have few indeed.—J. WIGHTON.

YORKSHIRE.

Thorpe Perrow, Bedale.—Apples here are a bad crop, all having been destroyed by May frosts; Apricots, abundant; Cherries, good; Currants, abundant; Filberts, bad; Gooseberries, an enormous crop; Pears, good; Plums, moderate; Peaches, good; Raspberries, moderate, suffering from want of rain; Strawberries promised to be good, but from want of rain the crop is inferior.—WILLIAM CULVERWELL.

Wortley Hall, Sheffield.—Apples, Pears, and Plums, a failure, in consequence of the scathing winds and frosts which prevailed when the trees were in flower; Cherries a fair crop; Apricots on walls, moderate; all Gooseberries and Currants, where netted in spring from bullfinches, good; but where not protected, bushes everywhere are entirely denuded of their buds; Peaches under glass are a very good crop.—J. SIMPSON.

Cleveland District.—The Apple orchards attached to almost every farm-house in this district, are bearing lighter crops than I have seen upon the trees for several years, and the same may be said of the Pear and Apricot trees that cover the walls of both the houses and cottages. In gentlemen's gardens, however, the reverse of this holds good, the fruit crops in these being abundant; Pears and Apples upon dwarf trees are remarkably good; Plums, most abundant in many places; Gooseberries, Black and Red Currants, a heavy crop; Strawberries, plentiful, but small; Cherries, a very indifferent crop, the trees nearly killed through fly and blight.—J. T.

Stourton Park, Knaresborough.—After the very variable season which we have experienced fruit crops are as good, with the exception of Apples, as could have been expected. Apricots are everywhere abundant; Peaches and Nectarines are fair crops; Pears, Plums, and Cherries are abundant. Here Pears and Plums are better on standards than on walls; both Plum and Cherry trees have suffered much from fly; Apples are, in general, a very light crop, some trees are producing fairly, whilst others have few or no fruit at all on them. With the exception of red Currants (which are smaller than usual and a lighter crop) bush fruits are abundant. Strawberries in the gardens here are an average crop, but the fruit, owing to the drought and heat, is smaller than usual; the Strawberries in general in this neighbourhood are, however, a light crop, the continued drought having been much against them.—M. SAUL.

NORTHERN DIVISION.

Northumberland.—Shawdon Hall, Alnwick.—Early in the season the promise of an abundant fruit crop in this county was great, but in many cases the result has not fulfilled our expectations. This is not to be wondered at when we consider that in the month of May and early part of June we had had continuous frost. During several nights in the latter part of May the thermometer registered 7° of frost. To the dryness of the atmosphere, and abundance of early foliage, must, I think, therefore, be attributed the fact, that we have an average, if not an abundant, crop of fruit in this county. Apricots are fully ten days earlier than usual, the fruit being in some cases in different stages upon the same tree, as owing to the severity of the weather they came into blossom at intervals of eight or ten days. Peaches are not extensively grown in this county, but such as we have appear to be a fair crop; the trees are, however, suffering from fly; Pears on walls are just an average crop, but the trees are healthy and robust; Cherries are all but a failure; where the trees are exposed to the east or south-east, they are suffering from fly and blight; Apples, like the Gooseberry crop, are abundant in some places, but scarce in others; Black and Red Currants are, in many places, a light crop; of late Strawberries, the crop is quite an average one; Raspberries are an indifferent crop, the fruit being small and bluish, and, in some cases, the plants are suffering from canker and curl.—J. THOMSON.

Durham.—Lambton Castle Fence Houses.—Apricots here are a heavy crop; Cherries, fine; Plums, an average crop; Strawberries, plentiful and good; Peaches, fine and plentiful; Nectarines, good; Apples, very thin; Pears, average; small fruits, plentiful.—J. HUNTER.

NORTH-WESTERN DIVISION.

Lancashire.—Croxteth Park, Liverpool.—Strawberries in this part of the country are abundant and good; Currants of all sorts are thin; Gooseberries and Raspberries are fair; Cherries (Morello), good, but injured through black fly, May Dukes and other kinds a fair crop; Plums, including Damsons, a failure outside, plentiful in orchard-houses; early kinds of Pears a good crop, later sorts here injured by frost in May; Apples, which also suffered from frost while in flower, are a thin crop.—J. BISSET.

Cheshire.—Crew Hall.—Apples, very few; Pears, very good crops generally; Plums, average on walls, scarce on standards;

Damsons, which are largely grown in this district, very scarce except in sheltered situations; Strawberries, good crop with me owing to their being well watered during the dry weather; Cherries, an average crop; Peaches and Nectarines, good in orchard-house and on protected walls; Apricots, scarcely an average crop; Gooseberries, Red Currants, and Raspberries, plentiful; Black Currants, scarce; Nuts, very few. The very low temperature in the latter part of April and nearly all through May and June, lower than I have ever known it to be here, caused many fruits already formed to fall off, and prevented Apples, when in bloom, from setting.—W. WHITAKER.

THE AMERICAN FRUIT CROPS.

We have received from the Department of Agriculture, at Washington, the report of the fruit crops for the year 1874:

The bloom of all orchard fruits has been generally abundant. The frosts of April, especially those of the 29th and 30th, were not too early in the Southern States to be harmless. They proved exceedingly destructive to fruit prospects throughout the entire region south of the thirty-ninth parallel and the Ohio River. There are exceptions in the vicinity of rivers and in other protected locations, but they are very few. Scarcely a southern county makes so positive a statement as Boone, Arkansas:—"Almost every tree is loaded. Thousands of bushels of Apples and Peaches will doubtless rot in the orchards." A reduced yield is the nearly universal expectation, and many reports indicate less than a fourth of an average crop, and some scarcely a tenth. In cases where the germ escaped destruction by frost the young fruit is rapidly withering and falling off to a very discouraging extent. In the Eastern States the bloom is generally quite full, but the fruit was not developed sufficiently to make a report of condition satisfactory. Reports from the fruit regions of Western New York, Ohio, Michigan, Missouri, Kansas, Texas, and California are variable, but of fully average promise. In Pennsylvania the prospect for fruit is generally good. Increasing attention is paid to fruit culture in some portions of this State. It is stated that in Wyoming County "millions of fruit trees and Vines have been set out within the past fifteen years, and all are loaded with bloom and set with fruit." Fruit culture is also attracting much attention throughout the South.

Apples.—The States reporting condition, average, or above, are as follows:—Maine, Ohio, Indiana, Kentucky, Texas, 101; Rhode Island, New York, Minnesota, 103; Vermont, Illinois, Wisconsin, 104; Iowa, California, 105; Pennsylvania, Missouri, Nebraska, 106; Michigan, 107; New Jersey, 111; Massachusetts, Kansas, 118; Connecticut, 119. Those below average:—Virginia, 59; Mississippi, 67; Louisiana, 75; North Carolina, 76; Georgia, 82; Alabama, 83; Delaware, 88; Tennessee, 90; Maryland, 92; Arkansas, West Virginia, 96; South Carolina, 97. There is some complaint of injuries from insects in different portions of the country. "Caterpillars are more numerous than ever" in New London County, Connecticut, and very abundant in other sections of New England, and the pest is reported "in countless millions" in Ripley, Ind. In Decatur, Iowa, "the leaf-roller has taken nearly half the Apples." The ravages of the measuring worm are also reported. In Montgomery, Ala., a blight similar to that affecting Pear trees is injurious to Apple trees.

Peaches.—The eastern Peach-growing regions do not present very favourable reports of condition. The average for Delaware is but 60; that of Maryland 61; and New Jersey is placed at 80. Mild weather in winter advanced the buds, and late frosts and sleets brought much injury throughout this belt. A report from Kent, Maryland, after the great April frost, stated that Peaches would be abundant; but ten days later, after the occurrence of further frosts, our correspondent wrote that there would scarcely be a fourth of a crop—a full crop of Hale's Early, but scarcely any of Crawford's Early or Crawford's Late. Hale's Early has also measurably escaped in Caroline and Queen Anne. A similar injury of late frosts is reported from Wicomico and other Peach counties. The reports concerning the Michigan Peach region are favourable, and the average for each of the States west of the Ohio is not less than 100. The Middle States (excepting Pennsylvania), Ohio, and all the Southern States east of the Mississippi, will have a comparatively small production this season. The destruction was caused by frost and hail. The storm of the 29th of April, which was of snow as far south as Washington and throughout the plateaus of the South, was peculiarly destructive to young fruit or its germs. A portion of Indiana and Illinois report excellent prospects. It is reported from Jasper County, Missouri, that seedlings are a failure, while budded trees bear half a crop. In orchards of Bourbon, Linn, and Wilson, Kansas, the leaf is curling and the fruit dropping. The past winter has proved very destructive to Peach trees in Oregon, especially

those growing on a good soil, highly cultivated, and still worse on lands irrigated late in the season. In some localities in California the crops will be reduced by the effects of curled leaf and mildew.

Pears.—The condition of the Pear crop is below average in nearly all the States east of the Mississippi, the principal exceptions being Southern New England, New Jersey, and Pennsylvania. The bloom was abundant, but frosts proved very destructive. In Queen Anne, Maryland, "all are gone except some Seckels and Duchesses." In Anderson, Kentucky, "a large part dropped off." In Montcalm, Michigan, "the trees are about all dead, the effect of the winter of 1872-73"—a statement which is made elsewhere relative to Peaches as well as Pears. In the vicinity of Concord, Mass., the old favourite, the reliable Bartlett, has died out in numbers, and many others are visibly declining in vigour.

PEACHES AND NECTARINES ON THE SAME TREE.

It is a curious and by no means easily to be accounted for phenomenon, that of Peaches and Nectarines growing on the same tree—nay, sometimes even on the same branch; while stranger still is the record of trees bearing fruits, one-half of which was Peach, the other Nectarine. We have received a communication from Dr. Moore, of Glasnevin, enclosing a letter bearing on the subject from his friend, Sir Thomas Larcom, K.C.B., late Under Secretary for Ireland. Dr. Moore, in his note, remarks that "even in our advanced state of horticultural knowledge, few practical gardeners, or even the owners of gardens know that the Peach was originally a sport from a Nectarine;" adding that in the instance alluded to by Sir Thomas Larcom the sport has been reversed, the Nectarine occurring on the Peach. We shall let Sir Thomas tell his story:—

"Heathfield, Fareham, 7th July, 1874.

"MY DEAR DR. MOORE,—You gave me such satisfactory information some time ago about the four-leaved Shamrock that I am tempted to write to you to ask whether the Peach and Nectarine are akin to each other. This has occurred in the garden of a gentleman in our neighbourhood: a Peach tree, never failing to produce Peaches, bore last summer three Nectarines on a particular branch, on which branch there are now three Peaches. There is, I am told, for I have not visited or seen the tree, no appearance of the branch having been ingrafted. I confess I discredit the whole story, and take it for a fancy of the gardener. I do not know what is to come next, if fruit can grow grow by 'selection.' Do enlighten me.—Always sincerely yours,

"THOMAS LARCOM."

Dr. Moore remarks that the phenomenon must be of rare occurrence; as, though he has been for nearly half a century among fruit trees, he has never actually seen an instance of it; neither have we; but the fact is, nevertheless, indisputable. Mr. Rivers is of opinion that the Noblesse and some others of our best Peaches originated from the old White Nectarine. That comparatively new and fine Peach, Prince of Wales, was raised by Mr. Rivers from a stone of the Pitmaston Orange Nectarine; while of ten seedlings raised by him from stones of this same Peach, Prince of Wales, five turned out to be Peaches and five Nectarines; three of the latter being orange and two white-fleshed. Another eminent fruit grower has gone so far as to say he could produce the phenomenon by carefully removing the down from the surface of the young Peach when not larger than a Horse Bean, the result being a Nectarine in size, colour, flesh, and flavour. If any of our readers have met with a case of the kind this season (it has been thought to occur oftener in dry seasons), or can speak from previous personal experience, we shall be glad to hear what they have to say in the matter.—*Irish Farmers' Gazette.*

Vines from Eyes for Pot Culture.—I wish to know when the eyes of Vines should be struck for growing in pots in order to fruit in January, February, and March, and what are the best Vines for that purpose?—J. V. H. [Mr. Tillery, of Welbeck, to whom your queries have been sent, says:—"The eyes of Vines for growing in pots for fruiting in January, February, and March, ought to be struck in January or beginning of February, and the eyes should be taken from well-ripened wood from an early Vinery. They must be started in a brisk bottom-heat and grown in it, as well as shifted and stopped two or three times till they get strength and size enough by the time they are fit for the last shift into fruiting-pots. This is for young pot Vines intended to be forced the year after being struck. There is less attention required in raising early pot Vines, by growing them the first year as strongly as possible, and then cutting them down to have a strong rod the second year for the next year's forcing. They may, in the second year, be shifted into the largest-sized fruiting-pots, and each Vine will then bear from twelve to fourteen bunches of finely-coloured fruit; at least I had this year, on pot Vines so managed, that quantity of bunches on the Esperione

Hamburgh and Foster's White Seedling. The greatest cause of success in forcing early pot Vines is in having the wood well ripened as early as possible, and then placing them in the open air in the latter end of the summer and autumn to harden the wood into a state of rest before being forced. As a black early Grape for growing in pots there is no better and surer bearer than the Hamburgh, and I prefer the variety of it named the Esperione for the purpose. The purple Constantia or Frontignan is another excellent variety for early forcing, and, having a perfumed flavour, it is much preferred by some. As to white Grapes for early pot culture I have found Foster's White Seedling, Buckland Sweetwater, and the Royal Muscadine to be the best."]

MERAN AND THE "GRAPE-CURE."

MERAN, the ancient capital of the Tyrol, though it has long ceded its metropolitan honours to Insbruck, remains the head-quarters of the Grape-cure, and is unrivalled for beauty of situation and charm of climate. Rounding the shoulder of a mountain, one comes suddenly on a scene of peace and of luxuriant beauty which might befit a vale of Arcadia. Mountains of 6,000 or 7,000 feet high enclose a wide valley, dotted with farmsteads and white cottages, all surrounded by a southern vegetation. Here grow magnificent Spanish Chestnut and Fig trees, while a perfect net-work of Vines trained over trellises covers the hills. Along the edge of the road grow immense Pumpkins, with their robust picturesque leaves and yellow flowers gazing right in the sun's eye; while beyond lie fields of Indian Corn—making up altogether a rich and luxuriant picture. After a couple of miles of this scenery we entered Meran, a sunny cheerful town, lying on the right bank of the bright and brawling little river Passer. The population of Meran numbers 4,500; this is greatly increased during the months of August, September, and October, by strangers, who come for the Grape-cure, and to rest awhile in a climate so dry and warm, and yet so much cooler than Italy during this season. The visitors are chiefly those suffering from chest complaints. The Meranees are not an enterprising people, and trust confidently to the beauty of their town and climate, and most implicitly to their Grapes, to allure the stranger. And there is a charm in this simplicity far more delightful to many than the usual stereotyped amusements of a watering-place. A band plays every morning in the gardens; and here the visitors walk, eating Grapes, or read, or sketch with a basket of Grapes beside them, or ramble about in family groups—all, and always, eating Grapes. The first thing one does on arriving at Meran is to buy a basket; Grapes of the richest bloom and most delicious flavour are to be seen all around; they hang in purple bunches over all the hills, in every garden, round every cottage porch; carts and baskets full of them are brought into the town every morning, and they lie heaped on stalls in glorious profusion at the corners of the streets. Everybody who comes "takes the Grape-cure," to the extent of eating more Grapes than he ever did before in his life, unless he prefers Pigs, which are almost as plentiful and excellent. No quantity of Grapes under three pounds a day can be considered as a true and energetic Grape-cure. The patient begins with one or two pounds a day, dividing the quantity into three portions—one taken an hour before breakfast, the next between that and dinner (which takes place at 12.30 or 1 at latest at Meran), and the last portion in the afternoon or evening, an hour before the last meal of the day. The Grapes must be eaten in the open air, an injunction obeyed to the letter at Meran, as everybody walks about eating Grapes all day long, unless you prefer taking one of your three portions sitting in your verandah, gazing out over the lovely country. After a couple of days the quantity is to be increased by half a pound, until it reaches three or four pounds. This is often sufficient—dependent, of course, upon the nature of the disease, the progress it has made, &c. Many people eat six pounds daily, although as many as eight is said to be unusual. Patients are not to be discouraged if they feel less well after three or four days of Grape eating; this is not seldom the case; but, this crisis being past, they speedily feel the benefit of the treatment. One great advantage of the Grape-cure is that no special diet is enforced. Food in any way trying to the digestion is, of course, forbidden; and other fruit is in general not recommended; but, after eating from four to six pounds of Grapes daily, one does not feel any particular inclination for further indulgence in Pomona's bounties. Grapes, containing a large quantity of nourishment, have a very satisfying effect on the appetite generally, and less of other food is required; and, in cases where the cure is taking good effect, the patient gains in weight, and, after a while, in strength also. The cure occupies from four to six weeks, and during September and October the Grapes are at their best. Early ones are to be obtained in August and late ones in November, but they are neither so good

nor so efficacious. The country, too, is in its greatest beauty during the height of the Grape season. Not but what April is a charming month at Meran, when the abundant Almond and Apricot trees are a mass of blossom, and when the traveller returning home after a winter passed in Italy is tempted to linger awhile in the pretty little town before proceeding northward.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

THE time has almost arrived when, in ordinary seasons, the flower garden is expected to be at its best; but this is far from being the case this season, and if a decided change in the state of the weather does not take place soon the display this season will be meagre, as well as of short duration. Wherever watering the flower beds is attempted, it ought to be done effectually, otherwise it does more harm than good. There is frequently considerable difficulty in properly applying the water to the beds in very dry weather and on light soils, when and where it is most required. More particularly does this happen when such beds are on an incline, as, where that is the case, the water applied is almost sure to form channels for itself, and pass off, leaving the thirsty occupants of the beds little, if at all, benefited. The only remedy for this is mulching with some suitable material, as this prevents the water from running off the surface, as well as prevents, to a great extent, evaporation. But, as a mulching in the flower garden, manure is hardly admissible, on account of its untidy appearance; and, possibly one of the best materials for that purpose, where it can be conveniently obtained, is tanner's bark, or tan fresh from the tan-yard; this, when neatly applied, has by no means an untidy appearance, and possesses also the property of driving ants and other troublesome insects from the beds. The time is also at hand when steps must necessarily be taken to commence the propagation of plants for next year's embellishment, but, to attempt at present to take cuttings from Pelargoniums and other plants occupying the flower beds, is of course out of the question, as, in most instances, such plants have hardly as yet made a start. The desirability, therefore, of possessing a well-stocked reserve garden, such as has formerly been recommended, will now be admitted. Now is, however, a good time to make a rough sketch or plan of the flower garden, and on each bed and border of which to write in pencil the name, or names, of the plants intended to be used in planting it next season, and also the probable number of plants likely to be required for such a purpose. By an occasional reference to this sketch, thus arranged, it will be seen at a glance what amount of stock is required for each particular department, and the annoyance of having too few, or of having more of some varieties of plants than are really required, may be easily avoided. Now is also a suitable time to take a careful survey of the present arrangement of the parterres; and, should any improvement or alteration suggest itself as regards the distribution of colours, or other matters, a note should be made of it, to which reference may be made hereafter. The hot and dry weather is anything but favourable to Roses, the summer blooms of which will soon be over. Remove at once, therefore, all dead and decaying blooms, water frequently, and mulch the plants, encouraging them in every possible way, with a view to induce them to produce an abundance of autumnal blossoms. Stake and continue to tie up, as may be required, Dahlias and Hollyhocks; copious watering is indispensable as regards the latter, otherwise red spider will be sure to attack them. Castor Oils of different sorts, Wigandias, and various other sub-tropical plants, should now be neatly supported by means of stakes, if this has not already been done; and beds of such plants should be abundantly supplied with water. Follow up the layering of Carnations, Cloves, and Picotees, as formerly directed; and be careful to, in some way, prevent birds from scraping the soil from them during dry weather. Where Pink pipings have been inserted under hand-glasses, and are now fairly rooted, the glasses may be removed, and the first opportunity should be taken, after a good rain, to plant them where they are intended to flower. Auriculas may now be potted; some prefer to pot them before July is out; others defer that operation till August. It is a rule with cultivators to keep their plants dry and comparatively dormant during June and July. Water is almost entirely or quite withheld; the plants may be said to be maturing their growth. One well-known grower is fond of asserting that, years ago, he found out the benefit of potting early; and he asserts that many who have taken his advice on the matter can testify to its usefulness. He says, "If the plants are neglected till the middle or latter end of August, the old mould gets dry and finished up, the plants suffer, the fresh fibrous

roots, which they ought now to be pushing, die off in consequence; while, if potted early, while vegetation is going on, the new, fresh, and wholesome soil encourages and stimulates, as it were, new life into the plants." In re-potting, a good mellow, sandy loam, either yellow or black, must be had. Some like that kind of black turfy loam found in the moors of Lancashire and Yorkshire; and in this will be found a certain amount of a kind of silvery sand, which is considered to be preferable to any sea for fine silver sand found in the south of England. Besides the sand found in the black loam, some river-sand is added. In the south, where a fine yellow, but somewhat adhesive, loam is found, a quantity of sand and well-decayed cow-dung must be mixed with it; rough silver-sand is the best. On account of the prolonged drought little mowing will, at present, be required, but the lawn will, nevertheless, require constant attention as to sweeping up leaves and other littery matter, the dry weather having had the effect of making the leaves of deciduous trees, as well as of evergreen shrubs, fall in great quantities unusually early. Eradicate plantains and other weeds and coarse Grasses, from the lawns and Grass belts. There is little difficulty in discovering such intruders at the present time, as the finer Grasses are quite brown, and apparently dead; the first good rainfall will, however, make that all right.—P. GRIEVE, *Culford Gardens, Bury St. Edmunds.*

Roses.

In this month we must bid our Briars with those varieties which a keen and constant observation, at home and elsewhere, has taught us to admire the most. Ample instructions with cleverly-drawn illustrations, are given by writers on the Rose as to the art of budding; but an experienced gardener, with a sharp knife and a bank of thick cotton, somewhat resembling that used for lamps, will teach the amateur far more quickly and effectively than he can possibly be taught by books. Should mildew make its appearance, remove the leaves most affected, and cover the rest with flowers of sulphur when the tree is wet from shower or syringe, giving them another good washing next day. Mr. Rivers recommends soot as a remedy, and kindly sends me a letter, written Sept. 6, 1869, recording the result of a successful experiment. "Have you mildew?" he asks—"try soot. Some time towards the end of July a batch of Hybrid Perpetuals, five plants in pots, were white with mildew. Perry" (his late foreman) "tried sulphur without end, and at last in desperation smothered them with soot, in the dew of the morning. This rested on them for four or five days, and was then washed off. The effect was marvellous; the mildew disappeared, the leaves turned to a dark green, the buds opened freely, and the flowers were brilliant." That yellow-bellied abomination, the grub which produces the saw-fly, in this month attacks the Rose, sucking the sap from underneath the leaf, and changing the colour of the part on which he has fed from bright green to dirty brown. The process of "scrunching" is disagreeable, but it must be done. During the continuous droughts which frequently occur in July, it is desirable, of course, to water every evening, where water and waterers can be had in abundance. Elsewhere, I would advise that the surface of the beds be loosened from time to time with the hoe. It will thus retain for a much longer period the moisture of nocturnal dews. But there is nothing like a mulching of farmyard manure. Fading Roses should be removed from the tree, and preserved for the *pot-pourri* jar. The other flowers of the garden perish, but—

Sweet Roses do not so:—

Of their sweet deaths are sweeter odours made.

—S. REYNOLDS HOLE.

Hardy Flowers.

One of the chief operations in connection with hardy plants, at the present time, is that of collecting seeds, which on many early summer-blooming plants are now ripe; they should, therefore, be gathered and placed in a frame till thoroughly dry, when they may either be cleared of husks at once or stored as they are until a less busy time occurs, when they can have attention. In gathering seed, care should be taken to write a ticket or label for each species, or much confusion may arise at sowing time. Decaying blooms of perennials should be carefully removed, if not required for seeding purposes, as they tend to disfigure the appearances of the plants. Vigorous-growing sorts should be attended to as regards staking and tying, and some kinds, such as the Gunnera scabra, strong plants of Pampas Grass, &c., will be greatly benefited by thorough waterings, as will also flowering specimens of Pentstemons, Phloxes, &c. Cuttings of perennials may still be struck, and all seedlings of these ready for handling should be pricked off. Some Alpines in pots will be all the better for a top-dressing, and strong growing sorts should receive a shift into larger-sized pots than those in which they have been growing. Specimen plants in pots should receive attention as to watering, those which have bloomed requiring but occasional

applications in that way. Outdoor gardens continue gay with hardy border plants, some of which have been blooming for weeks in succession, notably such as *Corydalis lutea*, *Dicentra eximia*, Snapdragons, Lathyruses, *Geranium sanguineum*, *Erodium Manescavi*, various Lilies, &c. While, in addition to these, there are various others which have but recently come into flower; conspicuous among these are *Galega officinalis*, a tall plant of the Pea family, which bears an abundance of pinkish flowers; *Malva moschata alba*, a handsome white-flowering variety of our native Musk Mallow, thoroughly worthy of a position in any border of perennials; *Phloxis pungens*, a showy member of the Sage family, which produces large spikes of purplish-violet blooms, arranged in whorls; *Aster pyrenæus*, a neat and early-blooming species of this well-known genus; the old *Monarda didyma*, or Bee Balm, as it is commonly called, the bright scarlet flowers of which are bright and effective; and *Scolymus maculatus*, a Thistle-like plant about 4 feet high, surmounted by showy heads of orange-yellow flowers. Several of the *Asclepiases* have also commenced to bloom, and the *Santolinas*, so useful for edgings and other purposes in the flower garden, are highly ornamental when established tufts are seen studded with pretty button-shaped flower heads, as they now are in many places. The blooms of several hardy aquatics are now very striking, particularly those of the native-flowering Rush (*Butomus umbellatus*), *Justicia peduncularis*, and *Pontederia cordata*.—T. SPANSWICK.

Indoor Plant Department.

The deficiency of blooming plants in conservatories at present may be compensated by a liberal admixture of such fine foliaged plants as *Dracænas* and *Coleus*. Of the former take such kinds as *Cooperi*, *ferrea*, and *terminalis*; the bright colours of their leaves will supply the place of flowers, and the plants will not receive injury for the next two months by being placed in a cool house; neither will they suffer so much as flowering plants would by standing somewhat closely together, the greater amount of air and lower temperature of the house, compared with the stove in which they have been grown, having the effect of stopping them from making much growth. The different varieties of *Coleus* should be placed so as to get as much light as possible, otherwise they become drawn and have an unsightly appearance. The old *Plumbago capensis* is another useful plant at this season, and the present is a good time to propagate it. The small half-ripe side shoots will strike freely inserted in small pots under bell-glasses in a little heat. These, when struck, should be encouraged to make growth before the autumn gets too far advanced. They should be wintered in a temperature of 45° or 50°. In the spring they should be headed down and potted in 6-inch or 8-inch pots, using good fibrous loam. If desired, some may be grown on in larger pots, but for general decoration they are more useful in a comparatively small state. The plants will last for years by cutting them back in the spring just before they commence growth and when they have broken, removing a portion of the old soil, which should be replaced by new material, re-potting them in the same or a size larger pot. *Fuchsias* should have their seed-pods picked off regularly, or they soon cease to flower freely; they ought to be supplied twice a week with weak manure-water. Double *Petunias* are very useful at this season, either as decorative plants or for furnishing cut flowers. These should receive regular attention in the way of stopping and tying, to induce them to break back, or, from their quick somewhat straggling habit of growth, they become unsightly. *Lilium auratum* is a most useful subject for conservatory decoration at this season, but should not be introduced in too great numbers at a time, as its perfume, being so powerful, is oppressive. Attend well to the different varieties of *Lilium lancifolium*, by keeping them neatly tied out, and supplying them regularly two or three times a week with manure-water, otherwise the soil becomes exhausted, and they lose their bottom leaves, which destroys half the beauty of the plants. They must on no account be allowed, at this season especially, to suffer from want of water, even for ever so short a time, or the same mishap will follow. *Chrysanthemums* should now or soon receive their final shift, using from 8 to 10 or 12-inch pots, according to the size the plants are required to grow; 10-inch is a useful size. After the roots have got fairly hold of the soil in the blooming-pots, they should receive strong manure-water every other time they are watered. They will bear it as strong as any plant in cultivation. The Mashroom-shaped style of training is the most in favour with those who grow *Chrysanthemums* for exhibition, but it is unnatural and unsuitable for general decorative purposes. Plants of the larger varieties, confined to from two to five shoots each, neatly tied to a stick, the head of the plant brought out to about twice or thrice the diameter of the pots they occupy, will be found the most useful, and this will give them ample room for the development of their foliage, which, if they are well grown, will be of the darkest green. As the shoots of the large kinds branch out in growth, they should be thinned to the number of

flowers the plants are intended to carry, leaving one flower to each shoot. The plants will carry from six to eighteen, according to their strength. To those who have not tried this thinning process, it may appear a great sacrifice in quantity; but either for cutting or for decoration on the plant, one good flower is worth three inferior ones; and flowers so treated will last fresh on the plant fully a third longer than others that have been insufficiently thinned. The *Pompones* also require thinning, but not so much as the large varieties, neither in the reduction of the number of shoots nor to the number of flowers each shoot will carry; these may be left from three to half a dozen to each terminal shoot. The first batch of *Cinerarias* should now or soon be in their flowering pots, 6-inch ones, and should be encouraged by watering once or twice a week with manure-water; shade slightly in the sunny part of the day, and keep them quite clean from aphides. *Primulas* should be similarly treated, with the exception of keeping them a little drier at the root. Strike more cuttings of *Hydrangeas*, for succession. Attend well to *Euphorbias*, *Poinsettias*, *Salvias*, *Bouvardias*, and things in general for winter blooming. Press of other work frequently causes these things to be somewhat neglected, but in the case of quick-growing plants of this description, neglect is fatal to their flowering satisfactorily when the time comes that they are required.

Orchids.

Imported *Odontoglossums*, *Oncidiums*, and *Cattleyas*, that have made some progress on benches of *Sphagnum*, may now be potted either singly or two or three plants together in a pot; the former method is, however, the best. Use small pots at least half full of crocks for drainage. Both crocks and pots should be well washed and perfectly dry when used. The compost best suited to these plants is one of a free open description, through which all superfluous water readily passes away. Pull the peat into pieces the size of pigeons' eggs, rejecting all refuse, grass-roots, and small dust, which, if used, washes down into the drainage, and soon causes the soil to become stagnant and sour. The peat should be mixed with living *Sphagnum Moss*, crocks, or charcoal, and sufficient coarse grit or sand to keep it from becoming firmly bedded together. Place a layer of Moss over the crocks before filling the pot with compost, as this causes the drainage to last perfect for a much longer period. After potting, surface the pots with living Moss, and set the plants in a shady corner of the house until they establish themselves. Small pots are much better than large ones for nearly all kinds of Orchids, and it is a good plan after the plants become too large to place the plant, pot and all, into one a size or two larger, merely filling up the spaces with *Sphagnum*. This is a far better plan than turning the plant out of the pot, for, if well established, the best roots will cling to the sides of the pot so firmly as to render it impossible to separate them without injury. Orchids now in flower, as *Cypripediums*, *Odontoglossums*, *Oncidiums*, *Miltonias*, and *Masdevallias*, may either be removed to the conservatory or sitting-room, where their blossoms will last as long, or even longer, than when kept in the houses. Damping down two or three times daily and shading must be strictly attended to, as otherwise much injury may result, especially to the cool growing species.—F. W. BURRIDGE.

Indoor Fruit Department.

As soon as the fruit in the Pine-stove has been well ripened and cut, the first opportunity should be taken to clear out and thoroughly cleanse the compartment by washing the glass, woodwork, and walls with water. Then prepare some boiling water, with which incorporate newly-burned lime, sulphur vivum, and some fresh soot, and with this mixture give the walls, flues, and all corners a good washing twice, so as to fill up every crevice. The woodwork should also be painted over with good old white lead mixed with boiled oil. After this all will become sweet, wholesome, and water-tight for some time to come. See to joints of the pipes, and examine and cleanse out both pipes and boiler. See also to the flues, fireplace, and bars, and have all properly adjusted and in good working order. If the houses are heated only by flues, examine and clean them thoroughly, and wash them over twice, as above directed, in order to have all crevices stopped and in good working condition. Renovate and renew all plunging materials, and lose no time in filling up again with fruiting plants that are about to start for autumn and winter use. Encourage succession plants in every stage to make vigorous sturdy growth by a kindly bottom-heat, applications of good clear tepid manure-water at the root, and heavy applications of clear soot-water from the engine or syringe, early in the afternoon, should be given, and air applied freely night and day. Suckers, of course, should be taken off as fast as the fruit is cut, with a piece of the old stem adhering to them, which assists holding them firmly in their pots, supporting them without a check till rooted, which they will do in a very short time on a kindly bottom-heat, and grow on without loss of time. Unless suckers are constantly potted on as

they become ready at all seasons of the year, there must be a lack of fine-seasoned well-prepared fruiting plants ready for every day in the year, to fill at once the places of those removed. Respecting the choice of suckers, discard those of plants that produced a number of them, and also those from plants that did not produce a first-class perfect fruit. As regards Vineries, give the earliest house all the air possible as soon as the wood is well ripened, so as to bring the Vines into a state of rest. The earliest pot Vines will now have their canes well browned and ripened, and may be placed in the open air. If heavy rains occur later in the season, the pots may be placed on their sides, so that the roots may not get drenched too much, before they are placed in the pits or houses for early forcing. Peach and Nectarine trees in the late houses will now require every possible assistance to ripen the fruits perfectly, by exposing them to the direct influence of the sun and air. When the fruits are all gathered, the foliage must be kept clean and healthy by repeated syringings; sometimes brown scale puts in an appearance, but it must be eradicated as soon as detected. If the borders are dry after the crop is off, a good soaking of manure-water will greatly assist the trees in ripening their buds. In orchard-houses, syringings must be discontinued as soon as the fruit begins to ripen, and only as much water given to the roots as will prevent the trees from suffering. All the air possible must be given, and in very hot days damping the floors and stages will do something to save watering and keep the air healthier for the trees. Keep pinching all strong-growing shoots, on purpose to encourage strength in the weaker ones, and to keep the trees in form. The latest put out Melons will now want a little manure-water to force them on, and if they are grown in pits the surface of the bed may be mulched, to prevent the sun from drying the soil too much. The laterals will want frequent thinning and regulating, and a healthy foliage encouraged, for upon this is the flavour dependent. Late Cucumbers in frames will now want nearly daily attention in the way of stopping each shoot after the fruit is set, and placing them on a piece of slate or glass.

Hardy Fruit.

Continue to train and nail in all the young wood needed on wall trees, also to wash the trees; that is a better way and more effective than sprinkling overhead in the afternoon of bright days until the fruit is almost ripe. Washing cools, refreshes, and invigorates the leaves and branches, and also adds to the size and quality of the fruit. Few things are also more effectual in preserving the trees from insects. Water in copious streams is obnoxious to aphides; it forces them to relinquish their hold and sends them in showers to the ground. It is also the greatest foe to red spider, and even mildew is quite as often the result of drought, as of an excess of moisture. If dry sulphur is dusted on the wet leaves, mildew will be subdued, rather than aggravated, by a good washing from the garden engine. Should it, however, attack the fruit it must be instantly dusted either with dry sulphur or half and half sulphur and slaked lime. If dull weather ensues, then overhead washings must at once cease. Vines on walls should be stopped, and the leading shoots carefully trained and placed in the best positions. Vines in the open air were in flower this year by the 15th of June; as a rule, they are seldom in flower till the middle of July. It is safest not to stop the shoots of outdoor Vines too early, the more top-growth the greater the activity of the roots. The growth of the laterals stimulates to the full the energy of root-force, and when stopped, that energy is concentrated in the bunches, and they are carried through the flowering and fruit-swelling period with a rush. Besides the leaves are most useful for protection in a season like the present. Outdoor Grapes do well in many of the southern and eastern counties, and it is somewhat surprising that they are so little grown in gardens. Grapes are grown on many cottages, that would be relished at the tables of the rich. Further, outdoor Grapes, if thinned in bunch and berry, really swell to the size of the same varieties grown under glass, in favourable seasons; whereas, many of the evils, such as shanking, so prevalent under glass, are wholly unknown on the open wall. This is notoriously the case with that most exquisitely flavoured of all Grapes, the Frontignan, which so many cultivators have left off growing on account of its double tendency to shank and shrivel. In favourable positions out of doors it does neither, while the flavour is equally luscious with those grown under glass. As soon as the fruit is fairly set let those intended for table be thinned; possibly, it will also pay to thin those intended for wine, for it seems to be forgotten that wine, in respect to its quantity and quality, is a matter of Grape juice, not of Grape rinds and Grape seed. It is also almost certain that the larger the berry the better and richer the quality of the expressed juice. The bunches of Grapes intended for wine should likewise be thinned down to a reasonable crop as well as the berries, and this in the interest of the Vine as well as the quality of the wine.—D. T. FISH.

The Kitchen Garden.

We have scarcely had sufficient rain since the 2nd of June in this district to lay the dust on the roads, whilst a succession of bright sunny days has made the earth as hot as a furnace, rendering kitchen gardening by no means an easy task. Those who had the means and took the precaution to carry out persistently mulching and shading, will be able to appreciate its beneficial influence upon their crops, as well as its value in saving labour in watering; in fact, watering now on the bare earth unless the land can be flooded is of little use. Many kinds of vegetables now come on so rapidly as to make it difficult to keep up the necessary succession; great care should, therefore, be used in gathering Peas and French Beans, never to allow any of the pods to get too old for use; this has an exhausting influence upon the plants, tends to restrict production, and to shorten the period of bearing; when gathering the crops, also avoid, as far as possible, injuring either leaves or stems. Late Broccoli and winter Greens may still be planted whenever a favourable opportunity occurs, and the sooner all such crops are in now, the better in order to get the growth firmly built up before winter. Globe Artichokes should be heavily mulched with manure, if not already done, and immediately afterwards should receive a good soaking of water, the production of good heads later in the season will be much assisted thereby, and also by the removal of all bare stems from which heads have been already cut. Successional sowings of Lettuce, Endive, Radishes, and small salads should still be made under a north-wall, and, in order to ensure a rapid and continuous growth, shading even in such a position during the continuance of the present hot weather is indispensable, at least in the hottest part of the day. Cabbages that have been cut, and the stems of which are pushing again, should have all old leaves removed, the surface of the ground deeply loosened with a hoe, and top-dressed with manure; Cabbages are often cut and the stalks immediately afterwards dressed up, this is not, however, good practice; the check on the plants is too great, and it has a deteriorating effect upon future production. In all cases when Cabbages are cut the bottom leaves should remain on the stems till the sprouts have shot an inch or so, when they may be carefully cut off. All vacant spots from which winter Onions and other crops have been removed, should be manured and dug over in readiness for late Turnips, Spinach, &c. A season like the present will probably interfere with our calculations in timing the sowing of various crops, especially such as are required for next year's supply; and as the land, after such a roasting, will probably retain its heat longer than usual in the autumn, late growth may reasonably be anticipated. I should, therefore, recommend later successional sowings of Cabbages, Winter Onions, Spinach, Turnips, &c., than is usually found desirable.—E. HOBDAV.

Cottagers' Gardens.

No time should be lost in finishing the planting of all kinds of Winter Greens and Broccoli, also Leeks and Celery. A small sowing of Cabbage seeds should be made at once for spring use, and about ten days hence, for the general crop. Keep the soil frequently stirred amongst growing crops. Attention must also be paid to mulching and watering Beans, Peas, Vegetable Marrows, &c., as, if they are left until nearly withered and the earliest bloom lost, there will be little to repay the labour. The earliest varieties of Potatoes, now fast approaching maturity, may be lifted and stored at once; those intended for seed should be fully exposed to the air for some time. This is the best season for propagating Geraniums, for, with but ordinary care, one can scarcely fail in striking them at this season, and in getting them well established before winter. Attend to the tying up of Dahlias and such plants as require support. Pot plants should receive some stimulant in the shape of diluted manure-water, in order to induce them to prolong their season of blooming.—J. GROOM.

OBITUARY.

WE have to announce, with much regret, the death of Mr. Robert Godfrey, late partner in the firm of Waterer & Godfrey, Knaphill. He had been at the Midland Counties flower and fruit show at Birmingham, and had returned to his residence near Ryde, Isle of Wight. On Sunday night last he returned to his bed complaining of slight indisposition, and at three o'clock on Monday morning he was found dead. He was supposed to have had a slight sunstroke, brought on by the fatigue of travelling and the late excessive heat. He had retired some years from the business, with which he was connected for over forty years; he was an ardent lover of his profession, and by his indefatigable assiduity and shrewd business qualities in conjunction with Mr. Anthony Waterer—the present sole proprietor of the establishment—he developed the resources of Knaphill nursery in such a manner as to make it one of the best, if not the best, hardy tree and shrub nursery in existence. He was about sixty-two years of age; frank and generous in disposition, and has left a wide circle of friends to lament his loss.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

STRAWBERRY PLANTATIONS.

Of all our hardy fruits, none is so much influenced by soil as the Strawberry. Strawberry plantations may be made as soon as suitable runners can be obtained for the purpose; but where one sort will grow and fruit well, another will not only bear indifferently, but the plants absolutely die. All cultivators, however, agree as to Strawberries enjoying a strong heavy soil; such, undoubtedly, is the case, and it is rarely that growers for sale attempt their cultivation in large quantities where this condition of the land does not exist. There are, however, some thousands of gentlemen's gardeners who have often to deal with land of a totally different description; and who, nevertheless, are expected to furnish good Strawberries. In dealing with unsuitable soils, the usual method of planting in rows 3 feet apart, and something like 2 feet asunder in the row, is anything but conducive to success. In very light soils numbers of the plants get half thrown out of the ground in the winter during alternate frost and thaw, dying or making little progress in the spring; and by their being thinly planted they cannot be spared without serious blanks, the evil being much increased by the numbers that died off suddenly during the hot and dry summer weather. Again, the crop produced the first season from this thin system of planting, even if every plant bears, is very small as compared with closer planting. On naturally light dry soils, I put the plants in 4 feet beds, 1 foot asunder every way. If a few of these get thrown out by frost during the winter, they are not so much missed as if they had been planted far apart. The same holds good in respect to any that may go off in the heat of summer; but the leaves prevent the action of the sun on their roots to a much greater extent than the best mulchings that can be applied without the aid of the leaves. There is no better crop to precede Strawberries than early Potatoes, after which the ground will be much benefited by being deeply dug, working into the bottom a heavy dressing of cow or pig manure, which, being of a cold nature, is much better than stable dung. Before planting, tread the ground firmly, as is done in the case of Onions sown in spring. The plants should be got in as early as rooted runners can be obtained; and, if a crop is expected the ensuing season, they should not be planted later than the middle of August. Unless copious rains fall at the time of planting, they must be thoroughly soaked by means of the watering-pot, and not allowed to get dry until they are well rooted and growing freely. They will be greatly assisted if, as soon as planted, they are covered with Peasticks, over which should be thrown mats or some similar covering, during sunny weather, for a fortnight or so, after which time, if the weather is moist, or they have been supplied with sufficient water, they will be fairly established. Nothing more need be done through the autumn, except keeping all runners removed and the ground hand-weeded, all hoeing having a tendency to make the soil, naturally too light, still lighter. In the spring, give a moderate mulching with short littery dung; this requires to be carefully done by hand, the distance between the plants not admitting the use of the fork. The fruit the first season is usually the finest the plants produce, and, from the great number of plants that occupy the ground, they generally yield a good crop. After it is gathered, and a sufficient number of runners secured for planting, the centre row in each bed is cut clean out, and all remaining runners removed through the autumn. If this is properly attended to, the plants will bear a very great weight of fruit the second season. Unless there is a bad prospect of runners in time for planting sufficiently early, or the beds are more than ordinarily promising, as soon as the crop is gathered this second season they should be dug in with a dressing of manure, and the ground sown with Turnips. In soils unsuited to Strawberry culture two, or at most, three seasons is as long as they can be profitably kept, as, after that time, the plants begin to die off. On light land the plants must be well

watered, both during the time the fruit is swelling and also after it has been gathered. This last watering is of the greatest importance, for if, after the plants have ripened off the crop, they are too dry to commence growing until late in the summer, they will not have time to ripen the growth made, and the result will be large barren crowns in the spring. If the extent of ground to be planted is greater than the means at command for shading or properly attending to it with water until the plants have got established, still there should be no delay; as soon as the runners are ready they should be planted in a nursery bed, 4 or 5 inches asunder each way. In the limited space they will occupy here they can easily receive the necessary attention, and they can be removed a few weeks later, with good balls, to the beds where they are to fruit. As this system of culture is more calculated to excite growth in the plants than the treatment usually recommended for good Strawberry soils, owing to the heavy manuring and liberal use of water, such sorts should be selected as are free bearers, and not too prone to make an over-abundance of leaves. British Queen is generally too tender for such soils; and each grower will do well to ascertain the sorts that do the best in his immediate locality. In treating upon Strawberry culture, reference is usually made only to the nature of the surface-soil; little regard is paid to the sub-soil, a matter of no small importance. Heavy strong land, such as Strawberries like, is generally found resting on a sub-stratum of clay, and if at all wet, as such ground usually is, for successful Strawberry culture it requires more draining than is necessary for most crops. The land best suited for Strawberries is that where 15 or 18 inches of good strong retentive loam rests upon a gravelly sub-soil in a high situation. On land of this description they succeed in a way that has no equal. The crowns get thoroughly ripened in the autumn, and they escape frosts, even in such springs as the last, when those grown on lower land are in a great measure destroyed. Growers for Covent Garden Market, whose grounds are on the south of Enfield Chase, where the land is of such a nature as that just described, have had a wonderfully good season. The weight of crop has been excessive, and the individual fruit large, notwithstanding the extraordinarily dry season. A writer on Strawberry culture in a contemporary recently advocated their being grown in low-lying situations, forgetting that in such places, above all others, they suffer from two causes—insufficient ripening of the crowns in autumn, and through the bloom being cut off by frost in spring—conditions at once fatal to success, especially the latter, by which the earliest flowers, which produce the largest and highest-priced fruit, are so often destroyed. The sorts principally grown for market, in the neighbourhood just named, are President, Sir Harry, and British Queen, the same plants often standing and bearing well for eight or ten years. The land, previously pasture or meadow, is dug or trench-ploughed in the autumn, and allowed to lay through the winter. A crop of early Potatoes, or something similar that will be off the ground sufficiently early, is taken, after which the runners, as soon as they can be got and the weather moist, are planted in rows a yard apart, some 2 feet being allowed between the plants in the rows; but in dry seasons, and especially where the rainfall is usually below the average, it is often late in the season before there is sufficient rain to admit of permanent planting. In that case the plants have not time to get established before winter, and they bear little or nothing the following season. Strawberries in market gardens are well mulched in spring with the best fresh stable dung, litter, and droppings, used all together, the rains washing the manurial particles down to the roots, leaving the straw clean and in a fit state to preserve the fruit from being splashed with heavy showers. The ground is dug over between the rows in the autumn deeper than what would be considered by the generality of gardeners to be proper; but the nature of the land is such that it gets so excessively hard with being trampled upon in gathering, that no impression can afterwards be made upon it with the hoe until dug; and, although some of the roots must necessarily get destroyed by the digging, still, with Strawberries, as with other things, where the land is of a character well suited for their growth, they will bear, with impunity, treatment that would do serious injury in soils less favourable for their culture.

T. BAINES.

NOTES OF THE WEEK.

— WE have recently begun to experience a sort of vegetable famine in London, a dearth sure to come to us every season that brings with it a spell of hot weather in summer. Vegetables have been very scarce of late, and Cabbage, the most important of our green vegetables, dearer in Covent Garden than it has been for years; all this comes from having no provision for watering in our market gardens. The climate is supposed to be so moist that no artificial watering is necessary, and hence, when we have a dry season, London begins to starve for green food. No such state of things exists in any Continental capital. When our vegetables are inedible from drought, or perhaps not obtainable at all, the vegetables and saladings in Continental markets are as fresh and as tender as in the most genial month of May. Everything in the way of vegetables, except Potatoes, is getting dear; French Beans and Scarlet Runners, which last year at this time were obtainable at a penny a pound, were fetching eightpence a pound last week in Covent Garden Market.

— IN our recent article on shade-trees, we omitted to do justice to *Catalpa syriaca*, which, as we write, is in great beauty in London gardens. There is a good specimen before Mr. Whyte's house in Devonshire Place North, and there are many specimens in and about London. The *Catalpa* has the prime qualities for a town shade-tree, viz., fine foliage, which does not drop off at the very season when it is required, but endures fresh on the tree as long as shade is wanted; beautiful flowers, freely produced, and a size and habit which suit exactly the town planter's wants.

— MR. J. P. QUIN, the well-known New Jersey fruit-grower, is now in England, and has brought to our notice some of those excellent Cranberries which are grown so extensively in the reclaimed swamp-lands of New Jersey. These berries are, as is well known, the fruit of *Vaccinium macrocarpum*, a plant which thrives perfectly in this country in peat soil, and one which has been grown in a few private gardens for its fruit. In New Jersey, however, it is the source of a very important trade, and now the fruits are beginning to be imported to this country. They travel well in barrels, and they are also sent over in capital condition preserved in cans. This is the form in which Mr. Quin has brought them to us, and they certainly seem to be a most agreeable preserve, free from excess of sugar, and having a peculiarly grateful slightly acidulated flavour.

— COVENT GARDEN MARKET is now well worth a visit from all interested in choice flowers and fruit. Imported Jargonelles, Bon Chretien, and other Pears are coming in rapidly from the South of France and the Channel Islands; as are also Reine Claude Plums, the best of the latter being tinted with purple on the sunny side after the manner of our Transparent Gage. These are packed tightly in neat boxes ornamented with lace or gold-edged paper. Large quantities of foreign Tomatoes continue to arrive from Lisbon packed in boxes of sawdust; these are, for the most part, poor both in colour and flavour, a circumstance, doubtless, attributable to their being cut and packed before they are fully ripe. Imported St. Michael Pines are now abundant and cheap, and, although scarcely fit for table, make a capital conserve, or, when candied, form a valuable addition to the winter dessert.

— FROM the reports of the fruit crops which we published last week and which we continue in our present issue, it will be seen that though early in the season the promise of abundant crops was great, the result in many places has not fulfilled our expectations. This is not to be wondered at when it is remembered that in May and in the early part of June we had hard and continuous frost, and bitter easterly winds. Everything, too, has suffered from want of water, and blight and insects have been usually abundant. Peaches and Nectarines on open walls have done well but in few places, and the same may be said of Apricots, which have done better on north walls this season than on any other aspect. As regards spring protection, Mr. Knight, of Floors Castle, prefers branches of Silver Fir to any other kind of covering, except indeed it be an evergreen coping of Ivy which he is leading from an east aspect, on which it grows, over a west one on which he has his Apricots. Ivy where it exists on outside walls might doubtless often be used with advantage in this way. The Apple crop is by no means good anywhere, and in some places it is quite a failure. In Scotland, however, it seems to be rather better than in England. Pears and Plums are nearly everywhere fair crops, except perhaps Damsons, which are variable. Rivers' Early Prolific appears to have succeeded in some places where other sorts have failed. Cherries are plentiful but small; Morellos grown in the form of dwarf bushes, are said to bear better, and to be less subject to insects than trees trained on north walls. What are termed bush fruits are abundant. Walnuts and other Nuts are in general scarce. Where heavy mulchings of dung have been applied the greatest possible benefit has been derived from them, keeping, as

they have done this roasting season, the ground cool, and, comparatively speaking, moist.

— WE regret to find the truth of our note, p. 20, Vol. VI., with regard to the disposal of the Drapers' Company's garden for building purposes, confirmed, and have this week, in another column, alluded more fully to the subject, with the view of directing public attention to it. The corporation of the City of London will, surely, not allow this fine open space to be built on.

— AMONG plants now to be seen on Messrs. Hooper's stand in Covent Garden, may be mentioned *Bravoa geminiflora*, a graceful *Amaryllid* from Mexico, which has long tuberous roots, fresh green linear lance-shaped leaves, and a slender spike of curved tubular orange-scarlet flowers, which remind one of the inflorescence of *Chelone barbata*. It evidently succeeds well treated as a half-hardy pot plant, and deserves to be more generally seen in cultivation than it is.

— WE learn from Mr. Noble that in the Sunningdale nursery there are four specimens of *Arundo conspicua*, the average heights of which are from 8 to 10 feet. They are bearing, respectively, thirty-two, forty-five, forty-nine, and sixty spikes of bloom, and the diameter of the plants is from 1 to 10 feet, while the spread of the flower-spikes is, on an average, from 1 to 14 feet. Three years ago, near the same spot, a plant of this beautiful hardy Reed might have been seen bearing no fewer than eighty feathery plumes.

— MR. HERBERT MILLINGTON writes from King Edward's School, Bromsgrove, that on the 24th ult., at 11 o'clock in the forenoon, a hailstorm of indescribable fury burst over a portion of that town. In a few minutes the ground was four or five inches deep in ice, much of which (twenty-four hours afterwards) was lying in thick white patches under north walls. Greenhouses were utterly wrecked; nearly fifty window-panes were broken in King Edward's School, and the garden was utterly destroyed. The strongest shrubs were materially damaged. Even *Aloe* had their thick leathery leaves pierced and shredded by the hail. The storm was confined to very narrow limits. Its area did not exceed 1,000 by 500 yards.

— MANY complaints have reached us as to the difficulty experienced this season in getting bedding plants established. This is a difficulty which Continental gardeners yearly experience, and which is overcome by them in a simple manner. After having been planted, the beds are mulched with well-rotted manure, leaf mould, tan, cocoa-nut fibre, or other material suitable for checking undue evaporation, and, in addition to this cool covering, *Selaginella hortensis*, *Tradescantia viridis*, and other dwarf carpeting plants, are freely used. Thus treated, and with liberal supplies of moisture, the plants make rapid progress, and we can confidently recommend the plan to those whom it may concern.

— THE destruction of Vineyards by *Phylloxera*, which has lately so much engaged the attention of entomologists and botanists, was recently, we learn from *Nature*, the subject of a bill in the French Assembly. Many prefects, on the plea of public welfare, have issued orders for the uprooting and burning of diseased plants, and opposing the introduction of foreign stocks; but to make this desperate course effectual, a special law putting the *Phylloxera* on a level with the rinderpest is necessary. M. Destreux has submitted a bill to make this possible, and the Academy of Sciences gives it its support. Notwithstanding the investigations that have been made, no reliable specific against *Phylloxera* seems to have been yet discovered. The bill before the Assembly is received as "urgent."

— MR. BRAND's collection of Orchids and other plants was sold by Stevens the other day, and realised, as will be seen, fair prices, especially the splendid specimens of *Eucharis amazonica*, in the culture of which Mr. Howard is so famous. The following is a list of the prices realised by some of the finest specimens:—*Sobralia macrantha*, Woolley's variety, £3 3s.; *Phalænopsis Schilleriana*, £5 15s.; a fine plant, do., £10 10s.; *Odontoglossum pulchellum majus*, £10 10s.; *Cypripedium villosum*, £3 10s.; *Dendrobium densiflorum*, £4 5s.; *D. formosum giganteum*, £3 10s.; *Epidendrum vitellinum majus*, £5; *Dendrobium nobile cærulescens*, £9; *Aërides Fieldingii*, £5 10s.; *Vanda suavis*, Veitch's variety, £4 4s.; *Angraceum sesquipedale*, sixteen pairs of leaves, very fine variety, £18 18s.; *Cœlogyne cristata*, £3 15s.; *Anthurium Scherzerianum*, very fine plant, £15 15s.; *Adiantum Farleyense*, £4 15s.; *A. scrutum*, £3 10s.; *Lapageria rosea*, a very fine plant, £7; *Camellia*, standard, double white, £4 15s.; *C. Princess Bacciochi*, £5; *C. imbricata*, £7 7s.; *C. Chandlerii elegans*, £3 10s.; *C. Valteraredo*, 10 feet high, one of the finest plants in the country, £13 13s.; *Dicksonia antarctica*, £9 9s.; pair of magnificent plants of *Seaforthia elegans*, 10 feet high, £17 6s. 6d.; *Azalea indica alba*, £4; *Dracœna Regina*, £5 5s.; *Eucharis amazonica*, splendid plants, from £5 to £16 16s.; *Bougainvillea glabra*, £3; *Cycas revoluta*, £5 10s.

NOTES FROM THE LEVANT.

(Continued from p. 72.)

I ARRIVED at Macri on March 24th, and, though the country had not suffered so much from snow as that about Smyrna, there had been a most unusual winter, all communication with the interior being still prevented by the deep snow on the mountain passes. The situation of Macri is very pretty, at the foot of the high range of mountains called Cragus in ancient times, but now Babadagh. Flat and marshy ground reaches for four or five miles to the north, where the valley is shut in by another range of mountains, the highest peaks of which exceed 7,000 feet. The first walk I took in the neighbourhood of the town showed me that the flora was very different from, and much richer than, that of Smyrna. A very tall-growing Spurge, *Euphorbia lycica*, with spikes of yellow flowers from 1 to 2 feet long, and *Asphodelus ramosus*, were the two most conspicuous plants. Anemones of many colours carpeted the ground, and many curious plants grow on the rocks which surround the harbour. Up a ravine, at the south end of the town, I found two very rare and beautiful plants, which I have succeeded in introducing to England, I believe for the first time. One, which has been named by Mr. Baker, *Fritillaria Forbesii*, resembles a good deal the *Tulipa* (*Fritillaria*) *Sibthorpiana* figured in the "Flora Græca," but has narrower leaves and a larger flower. Its pale yellow bells were peeping out from under the shade of bushes, among the roots of which, at a considerable depth, the small delicate bulb was growing in a light vegetable earth mixed with stones. The other plant was a most lovely Iris, of a pale but very bright blue, veined with white and yellow, and bearing its flowers singly on stems about 8 inches high, which are produced from tufts of narrow Grass-like leaves growing in large clumps. The tube of the flower in this plant is so long that the seed-pod, when formed, is close to the crown of the leaves. Notwithstanding this peculiarity and the distinctness of the foliage from that of all other Irises, the plant, though known previously to exist in Crete, Rhodes, Lycia, and Greece, has not been distinguished from *Iris stylosa*, of which it was considered by Boissier as a variety only. I found it abundant in many places in Lycia, especially near Macri, but never in the plains; elsewhere, it seems very indifferent to soil and situation, but grows finest in partially-shaded places, where some vegetable soil is mixed with the decomposed limestone of which the mountains are composed. Several pretty and curious Orchids were common near Macri, among them *Ophrys scolopax*, *Orchis papilionacea*, and *Peristylus densiflorus*; these, however, were not yet in full flower, and when I returned to Macri, three weeks later, I found them almost over. The common Pine of Lycia is *Pinus halipensis*, which is abundant on the mountains and grows in some places to a great size. Very little vegetation, however, is found under its shade, the soil and climate being too dry for any of the plants which usually grow in the Pine woods of more northern countries. The common Ferns about Macri were all of species which can endure great heat and drought, such as *Cheilanthes odora*, *Ceterach officinarum*, and *Nothochlæna lanuginosa*, the latter, which I only found on the rocks to the south-west of Macri, is a very curious Fern, covered with a dense woolly coating on the back of the fronds. It is found also in some parts of Italy, but is not, I think, in cultivation here. As I had some difficulty in getting horses at Macri, I was not able to leave till March 28th, when I started for Minara and Xanthus, at both of which places the remains of magnificent ancient cities exist. I found during my trip, what many others have no doubt experienced, that journeys of eight to ten hours a day on horseback do not give much opportunity for collecting plants, and as a good deal of my time was taken up with birds, and I was unable to carry more than a very limited supply of paper I did not preserve nearly so many plants as I ought to have done. As, however, Professor Forbes, who accompanied Admiral Spratt in his admirable survey of this country, made a large collection of plants, and has written an excellent chapter on the botany of Lycia in his work,* I will refer to any who may wish to know more of them to that work. One of the most striking facts I observed, was that the herba-

ceous vegetation of this region, and of the Levant generally, is very much more in advance of the arboreal vegetation than in cooler climates. Here, in the month of April, spring flowers in the plains are almost over, and others, such as Poppies, Cistus, Veronicas, Orchids, Irises, are rapidly coming into bloom. The trees, however, are but little more advanced in leaf than they would be in Central Europe; Willows and Poplars were almost the only trees that had unfolded their leaves when I arrived, whilst Oaks had hardly begun to break their buds at the end of April. The reason of this, I believe, is that the spring, being much hotter and earlier than in Europe, rapidly brings forth all herbaceous plants; which are, by the time the more deeply-rooted trees are in leaf, already matured and beginning to die down. By the end of May, the heat and drought are so great that few herbaceous plants can resist it, and are completely burnt up by the sun. The trees, however, and such plants as *Salvias*, *Cistus*, and *Phlomis*, which grow on rocks and root very deeply into their crevices, find enough moisture to enable them to survive, whilst all kinds of bulbous plants are preserved by the strong soil, in which they mostly grow, until the autumn rain causes them to put forth new roots and begin to grow afresh. As far as I could learn, rain is almost unknown here during the months of June, July, and August, and the amount during March, April and May is very trifling. Cultivators of bulbous plants in England, and similar moist climates, should, therefore, remember that after the leaves of their plants have died down it is almost impossible to keep them too hot and dry, always provided the soil is strong enough to protect the bulbs from the air. I believe the great secret in growing such plants as *Iris susiana*, *iberica*, and some others from the same region which are reputed shy flowerers, is to put a light over them as soon as the leaves wither, and allow no rain to get to the roots. Experience, however, must be the best test of this, for though a good cultivator will always wish to know the natural conditions under which a plant grows he will not always attain the greatest success by imitating them. Large quantities of the Valonia Oak (*Quercus Ægilops*) are found in the valley of the Xanthus, and many other parts of Asia Minor. The cup of its acorn forms one of the principal articles of trade, and is exported for tanning purposes to an enormous extent. Corn is also exported from Macri; but of fruit the country produces very little, though soil and climate are both all that can be desired. In no country that I have seen are agriculture and horticulture more neglected than in the south of Asia Minor. Except Onions, Garlic, and a few Lettuces, hardly any vegetables are grown, and though Tobacco, Cotton, and Vines, would be probably much more profitable than corn, I saw hardly anything but Wheat, Barley, and Maize. With a wooden plough of the most primitive description and a pair of undersized and half-starved bullocks, the Turk goes on scratching away at the surface of his splendid deep soil. He does not take the trouble to grub up any bushes which may be in his way, but hacks them down and ploughs round them. He then, careless of manure, and altogether ignoring the rotation of crops, crushes the clods by driving his cattle over the field attached to a beam on which he stands: casts his seed into the ground; wishes for rain, and trusts to "Kismet" for the result. When he has cut his crop he is not allowed to carry it until tithe has been taken by the authorities, who usually farm out this tax to corrupt and rapacious Greeks, and as the crop is generally mortgaged in advance, or sold at a low price to pay pressing claims, but little remains for the cultivator. The consequence of this is, that the peasants of Lycia, though apparently contented and comfortable, as far as their ideas of comfort go, are miserably poor. Hardly a village I entered had two-storied houses, and for the most part the only houses were one-roomed sheds, with a mud floor and earthen roof. Cattle are their chief source of wealth, but owing to the poverty of the pasture, the breed is a very inferior one; and the sheep, though perhaps well suited to the country, much more resemble goats in their shape than such sheep as we have in England. However, I am afraid that the agricultural condition of Asia Minor will not be of much interest to the readers of THE GARDEN, so I will continue my account of the plants. On ascending to about 3,000 feet in the Cragus Mountain, I found but little difference in the flora, except that the Pines

* "Travels in Lycia." Spratt and Forbes, 1852. Van Voorst, 2 vols.

were larger and the spring much more backward. Bulbous plants were more numerous, and Orchids much less so; but I did not find anything of much note in bloom, though a month later, I have no doubt, the hills would be covered with flowers. Both the *Fritillaria* and *Iris* I found at Macri ascend to an elevation of 3,000 feet or more, but other plants appear which do not grow lower down. The most beautiful were a *Cyclamen* with small bulbs, very much like, if not the same as *C. Coum*.* It was in full bloom and very beautiful. A fine large autumnal *Crocus* was in seed, and a *Tulip*, which, I think, is *T. Oculus solis* var. *lycia* (Baker), was appearing above ground. The excessively sharp and rugged nature of the rocks in these mountains made it very difficult to go off the paths which have been worn by the feet of goats and cattle during many centuries. Up to about 2,000 feet, I found another *Cyclamen* very abundant, which I take to be one of the numerous varieties of *hederæfolium*, though leaves and bulb are very different. It has small and very brightly marked Ivy-shaped leaves, produced on a stem sometimes several inches long, of which several are often borne by the same corm. The latter is irregular in shape and much rounder than that of the ordinary *hederæfolium*, and never so large. These four sorts of *Cyclamen*, namely, *persicum*, *hederæfolium* var. *græcum*, and the two above-mentioned, were all I saw in the Levant; but there is a species in the island of Cyprus which is said to be a very pretty thing; I believe that it is not known in cultivation at present, except in the celebrated garden of Herr Max Leichtlin, at Carlsruhe. Before crossing the Xanthus river we passed through a perfect jungle of *Oleander* and *Myrtle*, under the shade of which the pretty *Ophrys Speculum* and *O. fusca* were growing, and rode round the marshy plain to the hills on the other side. In three days riding, during which I crossed a pass of nearly 4,000 feet, I reached the valley of Cassabar, which is entirely shut in by high mountains, covered above 4,000 feet with a forest of Pine, Cedar, and Juniper. The most interesting plant I noticed during these days was *Linaria pilosa*, a charming little woolly-tufted plant, with bright golden flowers, which grows on the hot dry rocks near the coast. The valley of Cassabar is a perfect garden of Orchids, among which I found at least seven species and varieties of *Ophrys*, including *O. lutea*, *Speculum*, *insectifera*, *fusca*, *Tenoreana*; and as many more of *Orchis*, few of which, however, were yet in flower. The tubers of *Orchis longicornu* are collected by the natives for salep, a preparation which seems to have quite gone out of use in England. At Cassabar I also found the bright yellow *Romulea crocea* (Boiss.), which was just opening its *Crocus*-like flowers in wet places near the river. Leaving Cassabar, I passed by the gorge of Dembra to the coast, a route the beauties of which it is useless my attempting to describe. For eight or ten miles the river winds in a narrow gorge between cliffs of 3,000 feet or so in elevation; but, as, in its windings, it leaves no room for a road, it is necessary to ford it from thirty to forty times during the day's journey. By the sides of the stream many beautiful shrubs and trees grow—*Oleanders* forming a perfect thicket, and *Pines* of great size overhanging the water. Under their shade I found several plants which were not observed elsewhere, among them *Fritillaria lycia* (Boiss.), a fine tall species, something like *pyrenaica* in appearance, but having much more richly-marked flowers. *Ophrys ferrugineum* was also abundant—a species which excels in beauty all others I know, except, perhaps, some of the forms which are known as *Scolopax* or *Bertolonii*. It has a great swollen labellum of crimson velvet, reflexed at the edges, and marked in the centre with two dark blue shining specula, which resemble, in some measure, the shape of a horseshoe. I should recommend those who may wish to cultivate this or any of the *Ophrys* of the Mediterranean region, not to expose them to the wet and cold of our winters, for, even though they might stand the cold, their proper flowering season is so early in March and April that the beauty of their flowers would be destroyed by the cold winds and late frosts. I am informed by Mr. Needle, who grows these beautiful plants with great success, that they do far better if the tubers are placed against the side of the pot. In this gorge I also found the lovely *Thalictrum orientale*, with pure white delicate

flowers as large as a shilling; a fine plant called *Phaca boetica*, and abundance of the same curious variety of *Cyclamen*, which grows on the Cragus Mountains. On arriving at Myra, on April 4th, I found summer really had come, the vegetation of the place being far in advance of any other I visited in Asia Minor. A great variety of curious and pretty plants covered the rocks and shore. Among them the most remarkable were *Passerina hirsuta*, which grew abundantly on the plain; *Phlomis fruticosa*, a Labiate plant, which though common in Lycia, here first showed its great yellow spikes of flower. *Aristolochia hirta* with its large gaping purple flowers; *Cynoglossum pictum*, and the pretty *Pisum fulvum*. Among the ruins of the ancient city and about its theatre, which remains in a very perfect state, were many rare plants, especially *Aloe vulgaris*, which I saw nowhere else, *Linaria pelisscriana* (?), *Ricinus communis*, and several kinds of *Onosma*, *Echium*, and *Borago*. At Myra, were several trees of a remarkable variety or monstrosity of Fig, which, instead of having a smooth bark as usual, had an immensely thick trunk covered with small branches and shoots from every part of the wood. In the ruins of a mosque was a fine old Date Palm, a tree which, though not often met with in Asia Minor, grows to a large size when planted in suitable situations.

The curious geological formation of the valley of Cassabar is very well observed on this route. The lower hills consist of a yellowish-white marl of tertiary formation, which probably once filled up the greater part of the valley, but being easily acted upon by the rain, has been washed down in a great measure, leaving a chaos of low sharp peaked and ridged hills, which run from the high mountain range, bounding the valley on the north-west. The soil of these hills is extremely barren, supporting only a scanty vegetation of stunted Pines and prickly shrubs, with *Cistus* and other herbs. At an elevation of 3,000 feet or so this marl disappears, and the mountains, like those of almost the whole of this part of Asia Minor, are composed of a hard white limestone or scaglia. As the road ascended, the trees became more numerous, until, at a height of about 5,000 feet, *Juniperus excelsa*, and *Cedrus libani*, were first observed, and though the snow had only been melted for a very few days and lay in patches on the shady places, a number of charming Alpine flowers were already in full beauty; *Cyclamen Coum*, or perhaps *calicium*, was very numerous, and buried in flowers. Two species of *Crocus*, *C. biflorus* var. *nubigenus*, and another, possibly *Sieberi*, of the same section; *Scilla bifolia*, *Galanthus plicatus*, or some species resembling it, *Anemone apennina*, or *blanda*, in three varieties of colour—deep blue, pale blue, and pure white; *Colchicum bulbocodiodes*, with eight or ten deep rose flowers, appearing together with the leaves; another species of *Colchicum*, and *Fumaria rutifolia*, all of which were found in great abundance and beauty, growing in the little openings of the forest. Many fine herbaceous plants, such as *Pæonies*, *Statice*, *Delphiniums*, *Astragalus*, &c., are, no doubt, to be found on these mountains in summer, but when I was there only the earliest spring flowers had appeared. The soil was a red loam, more or less mixed with vegetable soil and stones, and grows Barley well at an elevation of 4,000 feet. The natives of the country, at this time, were just beginning to come up to their summer quarters or yailahs, which, during the hot months, are much healthier and pleasanter than the plains. On my return to Macri I did not notice any new species of especial interest, except some Orchids which may be *Ophrys mammosa* and *iricolor*; but, owing to the changes which a fortnight had made in the vegetation of the trees, I was able to recognise several species which I had not seen in leaf before. The most characteristic trees of the low country are the *Valonia Oaks* (*Quercus Ballota*), *Ægilops*, and *Tinctoria*, and the *Pinus maritima* and *halipensis*. The Oriental Plane grows almost everywhere by water-courses and streams; and the Wild Olive, *Arbutus*, Carob Tree, and many shrubs, such as *Cistus*, Judas Tree, *Eleagnus*, *Daphne*, *Lentisk*, and Christ's Thorn (*Paliurus aculeatus*), cover the low hills to an elevation of 1,500 or 2,000 feet. On the higher mountains the trees are principally Walnuts, Poplars, Apples, Willows, Apricots, Pines, and Oaks; whilst the highest zone of forest is composed of Junipers and Cedars. H. J. ELWES.

(To be continued.)

* This may very likely be *Cyclamen calicium*.

THE FLOWER GARDEN.

SOLANUM CRINITUM.

It is not generally known that this is one of the most precious of all the plants known as sub-tropical, when grown in warm sheltered spots in the southern counties. Mr. Fleming, of Cliveden, was one of the first to introduce this system to our gardens, and among his finest plants were large specimens of this *Solanum*, which, in the sheltered glades of Cliveden, attained huge proportions. With us, in favourable conditions, it reaches to 4 feet or more high, the leaves being not unfrequently more than a yard in length. According to the *Revue Horticole*, this plant was introduced to Paris gardens in the year 1862, and is a native of Guiana. It is, in addition to its fine size and dignified port, a plant of remarkable beauty owing to the texture of its leaves, which are covered with a deep rich velvet of tender green colour, with violet veinings set with

will suffice, or were those who have not acquired such extended use of the visual organs to see the plants arranged side by side, in neither case would there be the slightest difficulty in endorsing the appropriateness of the term miscellaneous as applicable in all its comprehensive fullness to the plants I am about to pass in review.

S. Cymbalaria of Linnæus, though sometimes considered distinct from Jacquin's *S. orientalis*, is, I believe, no more than a synonym, at least in cultivation no tangible distinction presents itself. Haworth gave it, and one or two very closely allied species, generic distinction under the title of *Lobaria*. It is, however, a *Saxifrage* in all essential characters; an annual, or perhaps at times biennial, plant, whose whole structure is the very embodiment of tenderness and brittleness; its leaves are reniform, slightly cordate, and divided into from seven to nine lobes, and somewhat fleshy. In Nature its fragile stems are usually supported by the adjacent vegetation. The flowers are axillary, of a nice lively yellow colour, and produced in such abundance as, though individually small, to make the plant both striking and effective when in bloom. It appears to



Solanum crinitum.

spines. So very remarkable a plant deserves to be cultivated as an indoor plant where the climate will not permit of its being grown out of doors. Certainly there are many grown in stoves for their fine foliage, which are by no means so striking. It is multiplied by suckers from the root.

SAXIFRAGES.

By J. C. NIVEN, Botanic Gardens, Hull.

A Miscellaneous Group.

HAVING analysed the several divisions originally contemplated when commencing this series of articles, there still remains about a dozen or more species of *Saxifrages* that may, I think, be more happily allocated into a miscellaneous group than considered separately as representatives of a number of small sectional divisions. To those who are familiar with the appearance of the several species that I purpose introducing under this heading, a mental glance at the imaginary group

thrive best in a damp locality slightly sheltered from the direct sun; and, when once it is fairly established in a rockery, it is not readily lost, as it seeds freely, and never thrives better than when self-sown. The plant is of Eastern origin, growing abundantly in Asia Minor, Persia, and even the Western Himalayas.

S. Huetiana of Boissier is so closely allied that possibly it should be considered as only a variety; the chief characters, by which it is distinguished, are the smaller foliage, much less lobate, and the presence of a number of glandular hairs on the younger stems; it is also more purely annual in its duration than the former. The Caucasus and Tauria are recorded as its native habitats.

S. aizoides of Linnæus, known as the yellow Mountain *Saxifrage*, is a plant of considerable beauty; its habit of growth is procumbent, its leafy stems trailing along the ground, and assuming an erect character as it comes into blossom; its leaves are narrow, linear-lanceolate in shape, and slightly ciliated, densely arranged along the trailing stems. The flowers, a brightish yellow, besprinkled in the interior with rich orange dots, are produced in small corymbose cymes during the months of July and August, or even later in

high bleak places, our plant being a native of Britain, and met with frequently along the margins of many of our northern mountain streams, where, under the influence of a continual exudation of water from below, in the form of cool springs, it is capable of bearing the direct rays of an unclouded mountain sun; nay, more, of growing with a luxuriance in all its parts, such as those who know it only as ordinarily grown in pots and artificial rockery would scarcely recognise or deem possible. I have myself seen it fully 12 inches in height, with a development of leaves and flowers proportionately large. Besides being a native of Britain, it is to be found nearly over the whole of Europe, Asia, and the northern part of the American continent, through which wide area it presents scarcely any appreciable variation, except in respect of size.

S. aizoides var. *atrorubens* of Bertolini, is more generally known as *S. autumnalis* of Vitmann; it is a more compact grower, somewhat later in blooming, and its leaves are a darker green than the original type; the flowers, also, as Bertolini's name indicates, are of a darker colour, owing to the petals being more densely suffused with the orange dots. The literal translation, however, of the name, as applied to the colour of this variation, is far from correct. Nevertheless, it is a desirable and very constant form, and well worthy a place in all collections of Saxifrages.

S. Hirculus of Linnæus, the yellow Marsh Saxifrage, is synonymous with *S. lutea* of Gilbert and propinqua of Robert Brown. It is a dwarf caespitose or tufted grower, sending up its flowering stems to a height of about 3 to 5 inches, clothed with narrow linear-lanceolate leaves, ciliated towards the base, and terminated by a large bright yellow flower, or, in some instances, several flowers. The upper portion of the leafy peduncle is generally covered with short glutinous hairs, as are also the divisions of the calyx. Its time of blooming is towards the autumn, when its brilliant yellow flowers have a very attractive appearance, though not produced in such masses as in the previous species. To its successful cultivation, there are two essentials, viz., that it should be grown in peat soil, and have a continuous supply of root moisture, as well as full exposure to the sun. Though somewhat rare in Britain, it has an equally wide geographical range, through all the high mountain bogs in Europe, Asia, and North America, occurring even in a slightly modified form in Sikkim, as recorded by Drs. Hooker and Thompson.

S. Hirculus var. *major* is a distinct form with broader foliage, and flowers fully twice the size of the normal species; in fact, the term *major* is most appropriate to the development of the whole plant. I suspect this variety, although not recorded in the "Flora," is also British, as I have some dried specimens whose habitat is marked as having been found in Berwickshire.

S. flagellaris of Willdenow, though differing in foliage and habit from *Hirculus*, is closely identified with it as regards bloom, having flowers about the same size as the *major* variety of that species, and of an equally intense brilliant yellow. These are produced on the summit of a simple or unbranched stem, which rises to a height of about 4 inches, clothed with linear-lanceolate leaves from a dense rosulate arrangement of radical foliage, the whole of the leaves being beautifully ciliated with glandular hairs. From the axils of the lowermost leaves are developed on all sides a series of thread-like stolons about 3 inches in length, each terminated with a small bud, which ultimately develops into a separate and independent plantlet; hence, originating the popular name applied to it by the sailors in the Arctic regions of the Spider Plant, the parent representing the body of the insect, the radiating stolons the legs, and the terminal buds the feet, by no means an inapt comparison. This plant is, in my estimation, the very gem of the whole genus; it was introduced in the year 1851, in a living state to Britain—nay, more—in a flowering state; having been sent home by Dr. Sutherland, from Melville Island, he being connected with the Admiralty boats there in search of the unfortunate "Erebus" and "Terror." It was my good fortune to open the case, and never was there such an instance of "love at first sight" as this; and, singular enough, without knowing the name given by the sailors, I exclaimed, here is a veritable "Spider Saxifrage," so it has been twice christened. Its life was short, as it never recovered the dry atmosphere of the artist's studio. It is a native of the extreme Arctic regions, and also of the Caucasian and Altaic Alps, as well as the Himalayas, where, at great altitudes, it appears under various forms, to which as many distinct specific names are given, such as *mucronulata*, *spinulosa*, and *setigera*. I am in hopes of receiving a consignment of it from Nova Zembla some of these days.

S. stellaris of Linnæus, or the Star-flowering Saxifrage; though it cannot be classed as a showy species, nor is it as readily amenable to cultivation as some of its congeners, it is by no means to be despised; its radical leaves are few in number and hairy; in shape they are broadly obovate and cuneate, narrowing down the sides of the short petiole, slightly and irregularly indented in the margin; the inflo-

rescence consists of a few-flowered panicle, 3 to 6 inches in height; the flowers are white, suffused with a pinkish tinge, and with two yellow spots near the base of each petal. It is essentially a bog plant, and generally met with growing near the margins of mountain rivulets, or scattered in an isolated manner over the surface of our mountain bogs, where, as a rule, the floral element is deficient; hence, its simple flowers are the more appreciated. It has a wide geographical range through Europe, Asia, and America, especially in the northern regions of the last two Continents, and appears to vary in form a good deal; two of these forms are met with in Great Britain, the entire-leaved one being confined to the very highest mountains in Scotland.

S. Clusii of Gouan includes that known as *Leucanthemifolia* of Lapeyrouse, but not the North American plant of Michaux known by that name, which is perfectly distinct. This species is very closely related to the preceding, but has larger leaves, the margin for the upper half more regularly dentate and supported on longer foot-stalks; the inflorescence is foliaceous, the flowers are more numerous, and the foot-stalk shorter than those of the Star-shaped Saxifrage. It is a native of the Pyrenees and some parts of the Tyrol, and affects similar upland bogs, as does our own more familiar species. My own impression is that both this and the foregoing species are little better than biennials; and, further, in cultivation my experience is that they are not very readily raised from seed; vegetating pretty freely, but dying off before the true rough leaves become developed.

S. nivalis of Linnæus, familiarly known in our Alpine districts as the Mountain-clustered Saxifrage, is a dwarf-growing plant, with a tufted cluster of oblong-ovate leaves, downy in a young state, but glabrous when fully developed, slightly coriaceous, and acutely crenate at the margins, from the centre of which rises a dense compact inflorescence of small white flowers, rendered more attractive by the beautiful chocolate colour of the antlers. It is a native of the mountain districts in Wales, Scotland, and Ireland, but by no means plentiful. In cultivation it ought to have an abundance of root moisture, and with that may be freely exposed to the sun; but, failing that essential, it ought to be planted at the north side of a good block of stone. It is by no means a local plant, being met with through the entire northern region from Vancouver's Island to Kamtschatka; under slightly differing forms, *S. nigricans* of Fischer, as applicable to the dark antlers, and *S. primulæfolia* of Willdenow are both synonyms of this species.

S. virginianensis of Michaux, or *S. virginica* of Nuttall, are synonymous terms applied to a plant very closely related to the preceding species; it is, however, of considerably greater stature, the leaves broader and more crimped or undulate at the margins, and suffused with a downy pubescence, both above and below; the inflorescence is more branched and devoid of any bracteate appendages. Beyond these distinctive characters the Virginian plant might be taken as nothing more than a *major* form of our Clustered Saxifrage, and to it the same cultural remarks will be equally applicable. It is a native of the Rocky Mountains, from Virginia northwards.

S. pennsylvanica of Linnæus we take as the type upon which Haworth established his genus *Micranthes*, given to this section on account of the exceedingly diminutive character of the flowers. Springing from a short fleshy underground stem, the leaves rise to a length of from 6 to 9 inches—oblong in shape, and spatulate at the base, clasping round the stem; the margin is sparsely toothed, and the whole surface above and below is covered with a dense pubescence; from the centre of the mass of leaves rises a naked flower-stem to a height of about 18 inches, branching at the summit, and covered with a dense arrangement of small flowers with narrow greenish-coloured petals, which, were it not for the orange anthers, would be almost wholly devoid of beauty, but the latter, when seen in a mass of bloom, have really a charming effect, requiring, of course, a moderately close inspection. Neither this, nor indeed any of the three species belonging to this group will ever become popular plants, but they are valuable where a collection is grown as adding one more indication of the wide diversity of appearance which a single genus is capable of assuming. As the specific title infers, this plant is a native of Pennsylvania and also of Virginia, Ohio, and Kentucky, occurring as well in Canada.

S. pennsylvanica var. *glabra*, is sometimes called by the specific title of *marylandica*, for which, however, there is no authority beyond that indefinite one known by the title of "*Hortorum*;" it is, unquestionably, no more than a glabrous form, and is referable to Sweet's variety, "*semipubescent*," as endorsed by Engler. It grows abundantly in Maryland.

S. erosa of Pursh, obtains its name from the singularly irregular dentate character of the leaves, giving them the appearance as though they had been eaten away at the margin by some predatory insect; besides this, the leaves are shorter and broader than in the preceding species; the flower-stem is not so tall and much more

fleshy; the petals broader and more expanded, and, I may add, a thoroughly inconspicuous, though, perhaps, none the less constant character, that the seeds of this species are covered with minute tubercular processes. It is a native of Virginia, North Carolina, and along the entire range of the Alleghanies. It is one of those I have not at present in cultivation; should any Saxifragean friend possess a duplicate plant, it would be a very acceptable addition to our collection.

S. hieraciifolia of Waldstein and Kitaibel, is the third and last species of the *Micranthes* section which comes under our consideration. It is synonymous with *S. plantaginifolia* of Hooker—a much more appropriate name by the way—but, seeing that the former was first in the field and has established a tolerably wide reputation, we will not disturb it; it is similar in appearance to both the preceding species, its leaves being larger, more densely hairy, entire, and slightly revolute at the margins; the inflorescence more branched and distinctly bracteate; indeed, in one variety, the bracts become actually foliaceous. The petals are ovate, not linear, and the seeds are smooth. This is the only species in this very distinct section that possesses a European as well as a Transatlantic habitat; in fact, until Richardson's expedition into the far northern regions of the Hudson Bay Territory, it was supposed to be altogether European and Asiatic. It occurs in the Carpathian Mountains, in Norway, Spitzbergen, and in the Altai chain, also in Siberia. When planted in rich damp soil it acquires an enormous development, both in foliage and height of flower-stem, but it is liable to rot off in the winter when thus stimulated.

S. peltata of Torrey stands as the sole representative of Engler's section, *Peltiphyllum*, and is, we believe, the only peltate Saxifrage we have. Its large leaves (by no means fleshy) rise from a somewhat thick rhizome, and are supported on longish petioles; the margin of the leaves is twice dentate. I have not yet had the pleasure of seeing it bloom, nor, indeed, have I seen the figure of it, so must content myself by saying that it is both an interesting and distinct addition to the genus, and one which, though of but recent introduction, will become a popular plant by and bye. It is a native of California, the original dried specimens from which Torrey described the species, having been sent home by Hartweg, when out as collector for the Royal Horticultural Society; the living plants are, however, of much more recent introduction.

S. aconitifolia of Fielding and Gardner has been, I think, very properly removed from the genus Saxifrage by Nuttall, and described by him under the distinct generic title of *Boykinia*; it is, perhaps, the only species, as endorsed by Engler, that I should like to see removed from the Saxifrages. The general habit of the plant, accompanied by the valvate aestivation of the calyx, which we do not meet with in any other species, appears to me to give it a good claim to generic distinction. For this reason I have selected it as the finale of my descriptive list. It is a strong-growing plant, sending up leafy stems, terminated with paniced cymes of small white flowers, to a height of 18 inches or more; its leaves are cordate and palmately divided into seven lobes, having somewhat the appearance of the more entire forms of the *Aconitum* or Monk's-hood, from whence its specific title is derived; the flower-stems are covered with brown glandular hairs, and the ovary undergoes considerable development during the ripening process, by which a globose fruit, at least three times the size of the original adherent calyx is formed. This plant is very impatient of pot-culture, but grows well, and seeds freely planted out in one of our bog beds, where we have had it for years, and where a supply of self-sown plants is generally available. It is a native of North Carolina.

When I commenced the series of articles on Saxifrages, which I now bring to a close, I by no means contemplated anything like the lengthy and detailed analysis that I have endeavoured to give; possibly some of my readers will have had their stock of patience fully exhausted long before reaching this point; if such there be, I would add for their consolation that there are yet some sixty or seventy described species which I have not even named. Few, if any of these however, are in cultivation; at least it has not been my good fortune to come across them, except in herbaria, or as figured in rare botanical works. This, however, I can say that some of them are even more beautiful than any yet introduced. What gems are to be found on the lofty passes of the great Himalayan Chain, and also on the Cordilleras in South America, to all of which, culturally speaking, we are perfect strangers. Doubtless, besides these, there are many species not yet described that will at some future period reward the investigations of our Alpine tourists. Such men as our friend Mr. Maw, whose eye possesses that rare gift of being able to note at a glance, the distinctive characters of plants, rarely returns from one of his Continental trips without something new; yea, even amongst Saxifrages. If apology be necessary for introducing into my list species that are perhaps purely botanical, I can only say that in an extensive

correspondence that has resulted from my series of articles, I find that there is a thirst for information rather more on the botanical and rare than on the common and popular sorts; for this reason I have enlarged somewhat on what was my original intention. The correspondence I have just alluded to, while entailing considerable additional labour on my part, has been the means of giving me a large amount of information. At some future time, I may analyse the same and give your readers that are interested in Saxifrage lore a sort of postscript article, containing such items of information, thus acquired, as I may deem of general interest. I must not, however, conclude without bearing my testimony to the valuable assistance I have derived from Dr. Engler's exhaustive "Monograph," to which I have had frequent occasion to allude. I question much if any genus has ever been more thoroughly and perfectly analysed—exhaustive is the only correct word to apply thereto—extending, as the analysis does, over some 300 pages of closely printed matter. Its only defect—if defect it can be called—is in the fact that the popular descriptive part is in German, not in English, necessitating its translation before its valuable information can become available to non-Teutonic minds.

PLANTS FOR ALL WEATHERS.

If you have herbaceous plants on the brain, and live on a chalk rock with only 3 feet of soil, and have, into the bargain, continuous easterly winds in spring, and sharp nightly frosts, followed by a summer of intense heat, and no rain worth mentioning for five months, you will keep a keen look-out for those plants which bravely face cold, heat, and drought, and look fresh and bright under the most adverse circumstances. I am in the predicament just mentioned; and, for the last month or two, my desponding horticultural heart has been from time to time cheered by the irrepressible vivacity of a few plants whose names, I think, deserve to be made public. *Pyrethrum niveum*, for which I am indebted to the kindness of Mr. Maw, who brought it, I believe, from Morocco, has been for weeks a tall bush of bloom white as driven snow. I could see it standing out conspicuously among its floral brethren half a mile off. It comes very close to our British *P. Parthenium*; but is easily distinguished by its taller growth, larger flowers, and dense inflorescence. *Convolvulus althæoides* is now, from 9 a.m. to 2 or 3 p.m., one of the prettiest things in the garden. I have got it thoroughly established in a bed of Roses on their own roots, over which I let it run and twine at will, and very lovely are its thickly-scattered delicate pink blooms. Its congeners, *C. linearifolius* and *mauritanicus*, are also very good plants for standing drought. *Michauxia campanuloides* has, contrary to my expectation, been wonderfully fine this season. Two or three plants, planted in a clump, make a grand show when all their great white Passion-flower-like blooms are expanded. *Salvia pratensis* and its varieties, bicolor and rosea, *S. limbata*, *sylvestris*, and *bracteata*, have all been wonderfully fresh and bright. A tall bushy species, with clear white flowers, which I had under the name of *S. candidissima*, has also been very ornamental; and the profuse pinkish-lilac blooms of *S. lanceolata* have often raised my drought-dashed spirits. *Æthionema saxatile* is a gem of gems for a dry season. No amount of dust, heat, or dryness seems to check the luxuriance of its growth, or pale the brightness of the rose-coloured sheet of blossoms with which it covers the rock-work. I have not tried *Æ. grandiflora*; but, if it is true to its name, and as good as its congener, it must be grand. *Aphyllanthes monspeliensis* is a plant with which I could never succeed till the present year, but a large plant on a bit of dry rock-work was for a fortnight a perfect mass of blue stars. It was well set off by its beautiful little neighbour, *Arenaria purpurascens*, whose delicate purple and white blossoms quite hide the leaves. Amongst the *Geraniums*, *G. album*, with its great magenta blooms, and *G. sylvaticum album* were singularly beautiful and fine, the latter almost rivalled *Pyrethrum niveum*. *Erodium petraeum* and *macradenum* have also been finer than usual. Amongst the Saxifrages, *S. Maweana*, *Willkommiana*, *purpurascens*, *Tazetta*, and *pyramidalis* stood their ground well. *Phlox divaricata*, which hitherto I have utterly failed to grow, was for weeks a picture of health and beauty. Amongst the *Campanulas*, *C. persicifolia*, *coronata*, and *macrorhiza* have stood well. *C. isophylla alba* and *soldanelliflora* fl. pl., which are just coming into bloom, also

look very fresh. The great yellow blossoms of *Scolymus grandiflorus* and *Coreopsis lanceolata* are now looking wonderfully gay. *Melittis grandiflora* and *Lamium Orvala* have been finer than ever I knew them. *Betonica grandiflora* has done well, and *Pentstemon speciosus*, *Dianthus neglectus*, and *Aster alpinus albus*, three plants with which hitherto I have been able to do nothing, have been as good almost as I could wish them to be. *Dianthus arenarius*, *Atkinsoni*, *caryophylloides*, *fimbriatus*, and *giganteus* have all been good. Much to my astonishment, a self-sown patch of *Mimulus cupreus*, which stood the winter, was a week or two most brilliantly gay. *Iberis Pruiti* and *ciliata*, *Gaillardia bicolor*, *Lilium Martagon*, and its vars. *album* and *Catanii*, *Onosma echinoides*, *Achillea Ptarmica* fl. pl., *Teucrium pyrenaicum*, *Nepeta grandiflora*, *Peltaria alliacea*, *Phlomis fruticosa*, *Pentstemon glandulosus* and *Jaffrayanus*, *Gypsophila prostrata*, *Scabiosa parnassiae*, and *Helenium autumnale* have borne out the heat and drought wonderfully well. *Dahlia Cervantesi* and *Exogonium purga* promise well, and last, but not least, *Asteriscus maritimus* is the pink of freshness and beauty. H. HARPUR CREWE.

Drayton Beauchamp Rectory, July 21.

CLEMATISES FOR PILLARS.

THERE is scarcely a more effective way of growing some of the new hardy Clematises than as pillar plants. It is not always one can find space to plant them against walls, or they may be already covered with evergreen climbers; and the same may hold good as regards trellises. Where creepers are planted as screens or coverings they should be, for the most part, at least evergreen, for it must be remembered they are required for permanent decoration. It is, however, in the form of pillars placed here and there in shrubbery borders that I commend these Clematises. There is, in general, too much uniformity about such borders—dwarf plants in front, taller ones behind, and, as a background, Fuchsias, or it may be Dahlias and Hollyhocks. Now anything that varies this monotonous line ought to be welcomed; and these Clematises can be made to do this well. My plants, now perfect pillars of flower, are trained to some Hop poles, 8 feet in height. The plants were put into the ground three years ago, and are now well established. For two seasons I adopted the practice of cutting away to within 9 inches or a foot of the ground all the previous years' growth, but last season I varied the practice by not removing any of it; but, as usual, in November I forked in some good decayed manure about the roots, and in March last mulched well with cow-dung. The growth made last spring was tied in slightly to the poles as made, and it covered them from base to top; and, instead of having flowers only at the top of the poles, the plants present the appearance of perfect pillars. I shall now cease altogether to cut back hard to the ground, as is usually directed, and shall content myself with merely thinning out the oldest wood, leaving the growth of this summer to yield the flowering wood for next season. I have Jackmanni, Rubella, Prince of Wales, Star of India, Magnifica, Lanuginosa, Lady Bovill, Lanuginosa nivea (the finest pure white Clematis in cultivation), and Rubro-violacea, in grand condition. A few ties made round the poles, and a chief one to a nail driven in at the top, keep the plants from being driven about by wind. I obtained my Hop poles from Kent, at the cost of about eightpence each. Having been dipped in creosote, they will withstand several years' use, if drawn out of the ground in the autumn and stored away during the winter. When I remove the poles, I thin out the old wood and coil what remains round; it is then secured to a few short stakes, and in the case of Lady Bovill, Lanuginosa, and any of a tender character, some straw or Fern is securely placed about them to carry them safely through the winter. As soon as the buds begin to swell in spring, the poles are replaced, and the Clematises tied securely to them. Now that the plants are in full bloom, an abundance of water is absolutely necessary. The Clematis is a strong feeder; it throws out a great number of fleshy roots, which require ample nourishment. In addition to the mulching of manure, I apply some guano mixed with water, or some liquid manure from a stable diluted with water. The result is apparent in the size and brilliant colouring of the flowers.—Field.

Propagation of Hard-wooded Aralias from Cuttings.—The Araliaceæ in general, with the exception of those hardy species which are easily propagated from portions of the stem, are difficult to increase from cuttings. Those taken from the end of the main stem or branches, notably the Mexican genus *Oreopanax*, are often a very long time before they take root. Hence, there is an unfortunate delay in the spread of these splendid plants. There is, however, an

excellent method certain to lead to success, and this is to select only the lateral or, as it were, adventitious shoots which are formed on the main stem. These should be taken off young and at once placed in heat, just as we should treat ordinary soft-wooded subjects. This simple system has been successfully employed by M. Cornélie, head gardener to Viscount Vigier, at Nice, in the propagation of *Oreopanax dactylifolia* and other difficult species.—*Illustration Horticole*.

VIOLETS FOR NEXT WINTER AND SPRING.

If you would wish to have the best Violets which the garden can grow—and why not?—then begin at once, as follows:—Heavily manure and deeply dig a sheltered piece of ground—a south or west border, unless the garden is specially hot or dry—either near a wall or in the open quarters, according to circumstances. Break the surface fine in the digging, or rake it smooth; and, if the earth is of a loose texture and dry, as most soils have been this year, then run a roller over it, and tread it almost as firm as you would an Onion bed. Then proceed to mark it out in rows, a foot, 18 inches, or 2 feet apart, according as your ground is plentiful or scarce. Then go to your Violet plants, trowel and basket in hand, take off each rooted runner or shoot, or each distinctly-showing roots, and proceed to plant them at distances of 6 or 9 inches, or even 1 foot apart, if you can afford that space. Insert the roots carefully, and bury roots, runners, and all right up to the tuft of leaves, and even, in the case of plants without roots, place the short stems into the earth, and press the soil firmly in all cases round the collars. Unless the weather is showery, water them into their new homes; and, should dry weather again set in, they must not be allowed to flag. In ordinary weather they are seldom much trouble, but strike root freely, and at once, in the new soil. After they have become established, keep the ground free from weeds by frequent hoeing; and, should the plants produce runners and flowers—and they sometimes do both—pick them off. During the autumn they will form dense heads, and may yield a hundred or more Violets. About the beginning of October they will begin to flower, and part of them may be potted for house work, part removed to the foot of south and west walls or frames to yield a constant supply of Violets through the winter and early spring. Those who once adopt this system must not try to flower the same plants two years running. The difference in the produce of young plants and two-year-olds is marvellous, and the older the Violet the poorer the bloom. When the young plants have become established, destroy all the old ones; or, what is better, plant them out in the woods and pleasure grounds. Another plan answers almost equally well. As soon as the Violets have finished flowering take them up and divide them, retaining as much root to each as possible, and plant as already directed, rejecting any of the stems and roots that are unhealthy or diseased. Little is gained, however, by this method, unless it be that plants so treated need less water in dry weather when first planted out than under the other plan. Others, again, advise raising plants of the single varieties from seeds, an operation in which I never could find any advantage; but, on the contrary, a great loss of time. As to varieties. The single Russian, Czar, and Victoria Regina are the best single blue varieties. The single white is also useful, and a single pink or red is liked by some for variety. The double blue Russian or tree Violet and the Neapolitan are assuredly the best of all the doubles. The double white is also useful for variety, and some say it is sweeter than any other. When all are so sweet it is difficult to determine; but, if there is a difference, the Victoria Regina has it assuredly.—Country.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Chelone barbata antwerpensis.—This fine old herbaceous plant is now seldom or never seen, but it is one that would give satisfaction everywhere. It is a summer-flowering plant of long duration, and has fine handsome spikes of scarlet flowers, which are produced in abundance in a good heavy soil. The plant requires dividing and replanting every other year in fresh soil, like most other hardy plants.—*Flora*.

The Double-blossomed Scarlet Lychnis.—I send for your inspection a few blooms of this *Lychnis*, which is now in full blossom in my garden. I have fifty fine plants of it, which are all extremely brilliant in colour. I am told that this *Lychnis* is rather a rare flower; is it so, or not?—M. MILLER, Upway, Dorchester. [The flower-heads of this *Lychnis*, sent by our correspondent, were as large and showy as those of the best of our double-flowered scarlet Geraniums. It is a very old and handsome border plant, but one not half so extensively grown as it ought to be.—Ed.]

Primula officinalis.—I met with this name lately in the catalogue of a German nurseryman, and have searched through a great many books to find out what it is, but all in vain. Can you tell me? I should, perhaps, have contented myself with the supposition that it must be the common Primrose, but for the only allusion to it which I can yet find; this is in "Hardy Flowers," where it is mentioned that "the common Oxlip is a hybrid from *Primula vulgaris* and *P. officinalis*," but the latter plant is not described.—W. T. P. [*Primula officinalis* is one of the names of the common Primrose—Jacquin's name.—Ed.]

A DWARF JAPANESE TREE.

WHEN in America, in 1870, we were much interested at the sight of various Japanese curiosities in the way of trees and plants brought from that wonderful country by Mr. Thomas Hogg, to whom we are indebted for the introduction of a good many valuable Japanese plants. It is most curious to observe that while the trees are dwarfed and aged beyond what one would conceive possible, they are in perfect health and character. Recently the Comte de Castillon has sent a sketch (from a photograph) to the *Revue Horticole*, which shows, almost as well as the living object could, the aspect of one of these trees, so much loved by the Japanese gardeners. It is a specimen of *Pinus densiflora* var. *albifolia*, supposed to be more than a hundred years of age, the stem almost filling the vase in which it has grown so long. Whatever may be thought of the wisdom of growing such productions (to us it seems very much less objectionable than clipping trees into strangely artificial shapes), every person with the least knowledge of pot-plant culture will admit that to keep these dwarfs in perfect health for so many years is a remarkably skilful performance.

THE PLANTING OF WEST HAM PARK.

SINCE West Ham Park, near Stratford-le-Bow, has become public property, and its eighty acres of well-wooded land devoted to the healthful and rational enjoyment of the people of that district, the following account of its first occupation may not be uninteresting to the readers of THE GARDEN:—Ham House was built and the park laid out by Dr. Fothergill, a member of the Society of Friends, and the most eminent physician in London from the year 1750 to his death in 1780. He was a scholarly man, of refined tastes, great benevolence, and an excellent botanist. He had travelled much in America, and observed with admiration the glory of her forests, especially the flowering trees that fill the woods with such extraordinary beauty. In the early part of the last century the forests were more dense and frequent than at the present time of increased population. One of Dr. Fothergill's voyages to and from America was made in the same ship and with the same captain, a man of much nobility of character and kindness of disposition. During the voyage home the doctor was taken ill, but recovered under the watchful and almost brotherly care of the good captain. While the ship lay in London, waiting for loading, the captain was attacked by fever. Dr. Fothergill was constant in his visits, and had the satisfaction to see his patient's health re-established. Convalescent, and ready to take charge of his ship again, the captain requested the doctor to name his fee. He replied: "Under divine favour thou saved my life on the sea, I thine on land; our obligations, therefore, are mutual." "Then tell me," said the captain, "is there no way by which I can serve you?" The answer was characteristic—a request for a hog'shead filled with mould from a certain locality which he named, and well known to them both. He had observed in his travels the profuse blooming and shedding of fruit and seeds in more open parts of the forests and by the river-sides, and had conceived the idea that a portion of the earth into which these seeds had fallen might be brought to England, and that, with careful management, a number of young plants might be secured. His friend entered heartily

into his project; and, in process of time, three hog'sheads reached Ham House containing the desired treasure. A space of ground was cleared and prepared for its reception, and the doctor had the pleasure of seeing a plentiful growth, consisting of *Catalpa syringifolia*, *Magnolias*, *Robinias*, *Tulip* and *Judas* trees, with *Oaks* and *Maples*. This abundance he imparted to his neighbours, for most of the older gardens about Plaistow and Upton possessed duplicates. During a short residence in the neighbourhood of West Ham, in the year 1856-7, I had an opportunity of seeing the spot where the trees had been raised, and heard the story I have now related. The space of ground occupied a few roods, and was dotted over by *Rhododendrons*, *Azaleas*, and *Kalmias*. West Ham House and Park were built and planned by a good and great man, and is now given to the people. May they use it as a gift of no ordinary value.

A. D. H.

New Plants found at the Antipodes.—During a recent trip to the Hume River, in New South Wales, Baron Mueller met with several plants that were either new or extremely rare. In a gully, probably 4,000 feet below the level of the surrounding country, he discovered a species of *Bertya* (specifically named in honour of Mr. J. Findlay). The genus has long been known to Australian botanists, but *B. Findlayi* differs from all the rest in point of size, being sometimes 25 feet high. He also discovered on Mount Kosciusko, 7,000 feet above the sea level, a small species of *Pladtago* (*P. Gunnii*). This minute plant seems to be peculiar to high mountains, and differs from those species hitherto known in New South Wales. Besides making several discoveries of this kind, the Baron ascertained from personal observation that the so-called "Tasmanian blue gum" is really indigenous in the southern part of this colony; and that, in the same locality, several species of aquatic plants, but little known to the scientific world, occur plentifully. To these interesting facts he adds the discovery of a new Orchid (*Bolbophyllum Taylori*) by Mr. Norman Taylor; and several new plants from Lord Howe Island (particularly an *Aster*, which rises to the height of a small tree), and also a Fern (*Lomaria Fullageri*), from the same island, with a long caudex, and numerous pinnatisect fronds. Mr. Norman Taylor has recently sent specimens of Ferns from the Endeavour River. They are not new to botanists, but the collection of



A Japanese dwarfed Pine.

them is very interesting, as illustrating the geographical distribution of these graceful plants. Amongst the most remarkable of those not found in the neighbourhood of Port Jackson, are three species of the climbing *Lygodium*, and the curious and variable Fern, *Ceratopteris thalictroides*, which grows in pools of salt water not far from the sea, and in marshy places. Sir William Hooker, in his "Species Filicum," has a long account of this strange plant, and he shows that the different forms of it, as existing in Asia, Africa, and America, really belong to one and the same species. In addition to these, Mr. Taylor collected two species of *Gleichenia*, one of *Davallia*, one of *Adiantum*, three of *Polypodium*, one of *Doodia*, two of *Asplenium*, two of *Aspidum*, and one of *Acrostichum*. Several of these will prove interesting to cultivators of Ferns.

The Indestructible Paint Company.—Paint, says the *Builder*, which will readily preserve stone, brick, and cement is a desideratum, and the Indestructible Paint Company, Cannon Street, claim that their material will do so: further, they produce a paint which resists acids, alkalies, and heat. The fact that their stone-solution is the one selected for St. Paul's Cathedral is sufficient to give it a claim on our attention.

THE INDOOR GARDEN.

STOVE CLIMBERS.

ALLAMANDA CATHARTICA.—Where a good specimen of this is trained along a rafter in a sunny aspect, nothing can give greater satisfaction. When in flower, its beauty is undeniable; and, even when out of blossom, its fresh green foliage is by no means unattractive. Pot-culture suits it best; as, when planted in a border, the roots are inclined to ramble—a circumstance which causes the shoots to become gross, and the plant to make wood instead of producing flowers. All Allamandas require a season of rest, when they should be kept dry; and, when in pots, that can be more easily effected than when planted out. In summer, Allamandas may be readily struck from cuttings, each being put in a 2-inch pot, and they should then be plunged in a bed of tan, leaves, or sand, and covered with bell-glasses, in a temperature of 70°. When rooted, each may be transplanted to a 5-inch pot, in which it should remain until spring, when they may be shifted into 7-inch, and subsequently into 10-inch pots, in which they will bloom. I have seen them succeed well in soils of different kinds; but nothing suits them better than a good fibry loam, mixed with a quantity of half-inch bones, sand, and charcoal. No manure-water should be given until they show flowering laterals, when liberal quantities may be advantageously allowed them.

DIPLODENDRIA AMABILIS.—Dipladenias being plants unsurpassed in beauty, no plant stove can be properly furnished without them. *D. amabilis* may either be grown as a roof plant, or on a balloon-shaped trellis, which sets it off to good advantage. Like the Allamandas, it does best in a pot, for either trellis or rafter. Being rather shy to start into growth after resting, judicious management during the autumn and spring months is absolutely necessary, especially as regards watering, if considered worth keeping for flowering a second year; but, as autumn-struck cuttings form good flowering plants by the following autumn, old plants may be dispensed with. As regards compost, equal proportions of loam and peat, with a free admixture of dry cow-dung, charcoal, and sand, answer admirably. It dislikes being cut or wounded in any way; even the leaves, if injured in the least, soon show signs of decay. *D. Bolivensis* and *D. splendens* are also equally beautiful, but *D. amabilis*, being a favourite with me, I prefer to all others.

JASMINUM SAMBAC.—This, although strictly speaking a stove plant, may be grown well in a warm greenhouse; but, as a rule, a stove suits it best, and it should be planted out in a warm rough loamy border. In greenhouses it does best in a pot, as borders in such houses are generally colder than those in stoves. The best plan is to train two leaders up the rafter, and to spur in the young shoots, as flowers are produced most plentifully on old spurs. The best plant I have ever seen of it was inarched on *Jasminum multiflorum*, the roots of which seemed better suited for comparatively cold soil than those of *J. Sambac*. It was planted in a cool greenhouse, and ran through a broken square of glass into a warm Fernery, where it flowered most abundantly, and made strong healthy wood. Two leaders are better than one, inasmuch as one can, at any time, be renewed by training up a young shoot from the bottom.

STEPHANOTIS FLORIBUNDA.—This fine old stove climber may either be grown to almost gigantic dimensions or confined to a comparatively limited space. It should, however, have plenty of room, as the more the shoots are allowed to develop themselves, the more and better are the bunches of bloom. The latter are all produced on the young wood; hence, a quantity of young shoots should be kept up from as near the base as possible. Attention must also be paid to the training of the young shoots when growing, as they increase very fast, and are apt to get twisted together in such a manner as to render it difficult to unravel them without breaking or splitting them. After the flowering is over a quantity of the old wood should be removed, selecting such branches as have got least young wood upon them. Brown scale is almost sure to attack this plant, but it is easily removed by sponging with soap and water, and then giving a good syringing with water at the

temperature of 120°. The best soil for the *Stephanotis* is equal quantities of leaf-mould, loam, and peat, to which may be added a good allowance of rough sand. When grown in pots, plenty of drainage should be given, and over it should be put a covering of half-inch bones, but planting-out in the border is preferable to pot-culture.

HOYA CARNOSA.—This old-fashioned but beautiful plant requires, when growing, a good deal of water; when at rest, little is needed; but it should never be allowed at any time to become altogether dry. It will be found to succeed best as a pot plant trained on a trellis, or it may be trained on a back wall of a stove, but is not a good plant for a roof. The soil best suited for it is a turfy sandy loam, mixed with brick bats, lime rubbish, and charcoal. It may be propagated by means of cuttings, layers, or leaves, the cuttings being best. The best plant I ever saw of it was trained on the back wall of a half-span-roofed stove, where it grew most luxuriantly, and flowered in perfection. The wall was kept rather damp by syringing it; numerous branch-roots got attached to it, which, although no improvement in point of appearance, seemed to greatly assist its growth.

CISSUS DISCOLOR.—This, on account of the beauty of its leaves, deserves a prominent place among stove climbers. Like most foliage plants it dislikes being syringed, but it requires a moist atmosphere to bring out the beauty of the leaves in perfection. Pot-culture suits it best, for when planted out, it can never be properly dried off, and after that happens, if it ever starts again, growth is comparatively late and slow. In a pot, on the contrary, when the leaves begin to lose colour, the plant can be removed, and a *Stephanotis* or other ever-green climber put in its place. The *Cissus* should then be carefully dried off and placed in some dry warm corner, until it shows signs of starting again into growth, when it may be shaken out and potted afresh, watering carefully until it is fairly set agoing. A compost consisting of fibry peat, brick-bats, broken freestone, and sand, is all that is required. To the foregoing may be added, *Clerodendron Balfouri*, *Bignonia ornata*, *Bougainvillea speciosa*, *Echites rubra-venosa*, *Ficus repens*, *Ipomæa Horsfallia*, *Kæmpferia Roscoeana*, different kinds of Passion-flowers, Vanilla, and others.

JAMES MORRISON.

Aloe Bainesii.—This is now growing at Kew, and is a most remarkable plant. It has tufts of glaucous-green distantly-spiny leaves, a foot long, and 2 inches broad, crowded at the end of its branches, and was discovered by Mr. Baines, after whom it is named, in the northern part of Natal. From Mr. Baines's letter to Dr. Hooker, we learn that this arborescent Aloe was growing on the slope of a rugged hill, overlooking the sources of the Inada or Iuanda Rivulet, a tributary of the Tugela River, and perhaps nineteen or twenty miles north-east of Greytown. Early in June, 1873, while proceeding to examine a hill near the Tugela, reported to be auriferous, Mr. Baines first met with these arborescent Aloes, and remarked their similarity to the great tree Aloe of Damaraland, but also noticed that they were different from that kind.—*Florist*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Salvia gesneræflora.—This is one of the finest scarlet-flowered decorative plants for the conservatory during the winter and spring months. It is allied to *S. fulgens*, but the latter is a summer-flowering species.—M.

The Double-flowering Pelargonium "Jewel."—This is one of the very best of the recently-sent out sorts. It is robust, free-flowering, and a very fine dwarf Tom Thumb kind. It opens kindly, and the individual flowers are of great substance.—K.

Nothoscordum fragrans.—This pretty bulbous plant has been flowering freely in the Heath-house at Kew. It is nearly allied to the *Alliums*, and bears clusters of white flowers on a slender scape about a foot high. The foliage is slender and glaucous, like that of *Milla uniflora*. It is a plant well worth growing on account of its flowers, which are most deliciously scented.—B.

Mesembryanthemums.—These are not only useful as window plants—a purpose for which many of them have been used for many years—but, as rock-works plants, in sunny positions in the conservatory or greenhouse, they have few equals. Many of the species luxuriate when planted outside in dry sandy soil during the summer months.—B.

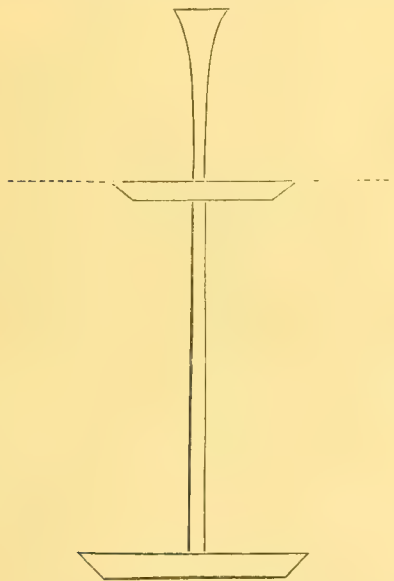
Campanula Portenschlagiana.—This pretty bell-flower is now in flower in the greenhouse at Kew, and, in spite of its long name, it is well worth attention. It is prostrate or pendulous in habit, and bears large salver-shaped blue flowers an inch and a half across. Its leaves resemble those of *Veronica Hulseana*, or a small-leaved form of the common Birch. As a plant for a bracket, or hanging-basket in the window, it well deserves a trial, being a most profuse bloomer.—B.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Forms of Stands.

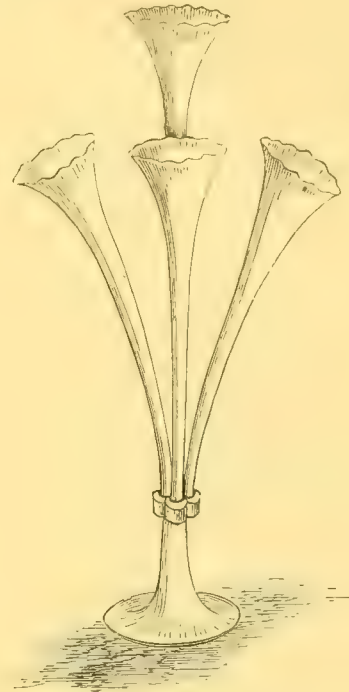
ONE of the principal things to be decided before entering farther into details, is the stands in which the flowers are to be arranged; of these there are so many varieties that it would be impossible to enumerate all; I shall, therefore, only select those which I have in use myself, and with which I have taken prizes. One of my favourites is the March form of stand, with a trumpet rising out of the top tazza. This I have always considered most effective; it is easily dressed, and not expensive to purchase; its greatest fault (and one which belongs to the true March stand) is, the bottom tazza is seldom or ever in keeping, as regards size, with the upper one; to remedy this it will be found a good plan to have zinc trays made of a size in keeping with the upper tazza; these trays should be about an inch and a half in depth, and painted green outside and white inside. The stand should then, after it has been screwed together, be placed in the tray, which, when packed with sand, will keep all perfectly firm; but should



March stand furnished with moveable top vase.

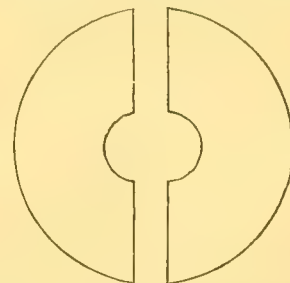
the stand, after being arranged, require to be moved from one table to another, it must be lifted by means of the zinc tray, and not the glass stem, which would be done were it not standing in such a tray. The next form which claims attention is the high single trumpet with three curved branches or trumpets arranged round the centre one. This stand is suitable for placing on a plateau of looking-glass, as it has no dish or tazza at the bottom; in my opinion, however, it is always improved by having some arrangement of flowers round the base, and, to effect this, it is a good plan to have a tray made similar in form to that just described, in which this description of stand can be quite as easily fixed as an ordinary March stand. My attention was first directed to this stand by Mr. W. Thomson, of Penge, whose taste in floral decorations is well-known, and I have since used it constantly at flower shows, and on our own dinner-table; it cannot, however, be arranged so quickly as the March stand, but a little practice will soon overcome that difficulty, and, when arranged, it forms a truly handsome centre-piece for the dinner-table. There is also a stand very similar to that just described, which has a tazza raised on a pedestal about 6 inches high, but, as this form is never made of as large a size as the first-mentioned, it is not so suitable for the decoration of a dinner-table,

but it nevertheless forms a very elegant drawing-room vase. A high slender trumpet, rising out of a flat tazza, is another form of vase which is well suited for the dinner-table. The next which I shall mention is the common March stand, perhaps the best known of any, and one which is to be found in almost every household where floral arrangements are attempted, though I must confess that I am not such an ardent admirer of this form of vase as most people; on the contrary, I much prefer, as I have stated, a March stand, with a trumpet rising out of the top tazza. Before concluding my



Compound trumpet-stand.

remarks on the forms of stands, &c., I must not forget to mention the trays for placing round the bases of plants which are brought through the dinner-table. These should be made of zinc, about 1½ inches in depth, painted green outside and white inside, and of the shape represented in the accompanying illustration. After having arranged the flowers in each half, they are placed round the base of the plant, and by a little adjustment of the foliage the points of junction can be quite concealed. In purchasing stands, the brightest and clearest looking should be selected. This is not, however, of so much



Tray for placing round the bases of plants.

importance in the case of the March form as in that of some others, inasmuch as the tazzas are filled with sand, but, where a trumpet or some such arrangement exists, transparency must be secured, as glass with flaws or marks on it would have a bad effect, and should be avoided. Another point worth remembrance, when purchasing stands, is to observe that those selected do not intercept the view across the table; for, no

matter how handsome the flowers may be, or how costly the vases in which they are arranged, if they interrupt the view, everybody seated at the table would, if they were consulted, have them removed.

Materials for Keeping Flowers Fresh.

As a rule these consist of clay, sand, Moss, and water. For flat tazzas or zinc trays, such as described for placing round the stems of plants brought through the table, sand or Moss should be selected; if the former, it should be Reigate or silver-sand, though any kind may be used; but, should any portion of it happen to be seen, yellow or common sand has an unsightly appearance. When the tazzas or trays have been filled with the sand, the latter should be wetted by means of a small watering pot, which should hold, say a pint or a quart of water, a fine rose being used for the purpose, and the sand should be watered until it is quite wet. The sand must not, however, be made too wet, as in that case the stems of the flowers will not stand upright or where placed. If Moss be selected, that sold by florists in bundles is the proper kind; but persons living in the country may obtain all they require in this way in the hedge-rows or woods. In the case of bought bundles, when opened out, all leaves or other rubbish should be removed and the Moss placed in a basket, and put under a water-tap, which should be allowed to run freely on it for some little time, so as to thoroughly clean it. When this has been done, the water should be pressed out of it, leaving just enough to keep the Moss damp and the stems of the flowers fresh. For filling the trumpets, spring water, if it can be obtained, is the best but whatever kind of water is used, it should be perfectly clear, as any little floating impurities are unsightly. Were I asked "which is the best material in which to arrange flowers—sand or Moss?" I should reply, "one is about as good as the other. If the flowers are to last for any length of time, place their stems in Moss, but, if this is not important, then use sand in preference."

A. HASSARD.

THE MISTLETOE GROWING ON THE MISTLETOE.

SOME time last year we called at Old Conna, the residence of Mr. Phineas Riall, near Bray. Besides its situation and views there is always here something to be found to interest the lovers of trees and plants. On inspecting a fine specimen of Mistletoe growing on an old Apple tree in the garden, and laden with its translucent pearly berries, many bird-sown seeds of itself were observed to be attached to the parasite. Several of these had germinated, and had apparently firmly attached themselves by means of the sucker or rooting end to the branchlets of the mother plant; but in no case, then noticed, had the plumule or ascending portion taken a vertical direction or developed further growth.

Being much struck with the fact, then patent, of the young Mistletoe plants rooting (if one may so term the process) in the parent tissues, we determined to keep the matter in view, and at a future day see what further progress, if any, was made by these partially developed little embryos. We are free to confess, however, that we had but slender hope of finding them come to anything. With this object mainly in prospect, we called at Old Conna, in the early part of the present month, and almost our first steps were directed to our friend the Mistletoe. On examining it, the dream of double parasitism was at once dispelled. The germinating entities of last year had made no progress, and in almost every instance life was only manifest at the descending axis, the young plant having withered off at the opposite end. We had almost turned away inclined to smile at the idea we had for twelve months entertained when attention was directed to what appeared to be a sturdy young Mistletoe growing on one of the internodes of the parent plant. Closer inspection left no doubt about the fact. Here was a stout young plant firmly established, which counted two or more years since it raised its little head aloft, and was then about making its third set of leaves. After admiring this tiny, but to us at the time exceedingly interesting object, we proceeded to examine more closely the thicker or inner ramifications of the plant, and were rewarded by finding growing midway on one of the thickest and smoothest internodes a sturdy young plant three times the size of the preceding, full of health and vigour, with two principal bifurcations, four secondary branches, and five sets of its twin leaves, counting its age probably by some half dozen or more years. Here, then, we found, established beyond cavil, the interesting, and, as far as we know, hitherto unnoticed, or, at all events, unrecorded fact of double parasitism.—*Irish Farmers' Gazette*.

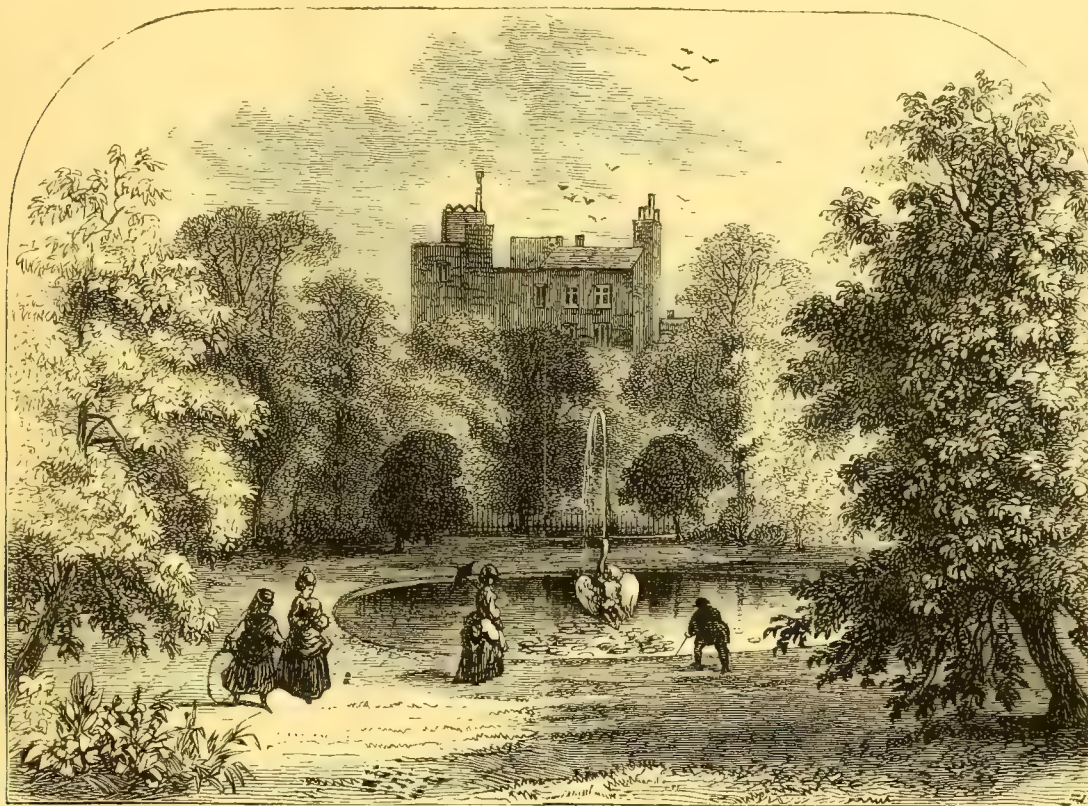
GARDENERS' ROYAL BENEVOLENT INSTITUTION.

I THINK this institution receives more support from gardeners than, as at present constituted, it has a right to expect, and in a very few words I will tell you exactly what I mean. It is the gardener's first duty, as it is that of any other man, to make the best provision he can for his old age, and in subscribing to this institution I do not think he does so. For this reason I do not subscribe to its funds. I hold a tolerably good position, have fair wages, and could well afford to pay the annual subscription of a guinea, constituting membership. Supposing I become a member and pay my subscription for a number of years, I have no guarantee that I shall have any return for my investment. I may become old and unable to work, but it is quite a chance whether I shall obtain anything from the institution which in better days I had subscribed to annually. I do not think a man, in making provision for old age, is justified in investing his savings in anything of a speculative character, as is the case in subscribing to this institution. Supposing I subscribe, and on attaining the age of sixty I should be unable to earn a livelihood, I shall stand a chance of being elected; but it is just possible a period of several years may elapse between the time of my sending in an application and being elected, and in the meantime I may starve. I am well aware of the rule under which members of fifteen years' standing are placed on the pension list without election, but that affords but poor consolation, for as years roll on there is a likelihood of there being more subscribers applying for admission than there are vacancies. When this is the case, of what avail is it that you have subscribed fifteen years? You have to incur all the expense and anxiety of an election, and in the end, perhaps, be defeated by those who are no more deserving than yourself but are fortunate in having more influential friends. But, supposing I am selected without election, or in an election am placed at the head of the poll, what is the pension I receive? Why, a pittance of £16 per annum; and supposing my wife was to be left a widow, and to be placed on the pension list, she would receive the sum of £12. This is about 6s. 0½d. and 4s. 0½d. per week respectively. I would like to know what a man or woman who has been in tolerably comfortable circumstances can do with these pittances. We have been told that we ought to support the institution, and I would like you to tell us what a man can do with six shillings or a woman with four shillings a week. I have been trying my hand at it, and the only use I can see for it would be to pay the rent of a room or a small cottage in a rural district. Again, to be eligible for election, you must not have an income exceeding £30 per annum, and you must not be in receipt of parochial relief; so that in the latter case, if you have not a good reserve of friends able to support you when you make the first application, you must either renounce all claim upon the institution or go on the tramp and stand the chances of being committed as a rogue and a vagabond. This is the assistance afforded by the "noble institution" we gardeners are called upon to support, and it is for this we head gardeners are expected to subscribe our guineas and take the sixpences and the shillings from the men under us. The pensions are an insult to the craft, and you may depend upon it that, until the institution offers something more substantial than at present, it will not receive a very large amount of support from gardeners. We have to work too hard for our money to admit of its being invested in such an unremunerative manner. If the institution afforded substantial assistance, plenty of gardeners would soon become members, but at present it is not held in high favour in gardens and nurseries. Unless it does something better, I do not see that it is of much use; for a man can, by beginning at thirty, secure an annuity of 6s. per week, to commence when sixty, by paying £2 per annum into the post-office. An extra pound is thus paid every year. But in one case the annuity is certain, and belongs to the recipient as a right at the age specified, whether able to earn his livelihood or not. In the other case it is uncertain; and, to stand any chance of obtaining it, you must stir up your friends and make the unpleasant admission that you are in a destitute state. [This letter, signed by a "Head gardener," and published in the *Gardeners' Magazine*, points out some things which deserve consideration when gardeners are appealed to to support this institution, and the thoughts which it expresses in connection with it have often been our own. Independence is a sturdy hardy plant which we should like to see every gardener cultivating, as it is more likely to thrive to his satisfaction than such feeble reeds of charity and benevolence as are above referred to. We also hope that the institution may some day be modified in such a way as to afford gardeners sufficient encouragement to join it from the wholly independent point of view. It should aim at offering gardeners a sufficient support in old age, and that support should be the right of all those who had duly paid for it, without any kind of voting or pretence of pseudo-benevolence.—*Ed.*]

OLD LONDON GARDENS.

NOWHERE are gardens and shade-trees more welcome and enjoyable than in our large cities and open town spaces, and any diminution in their number, in order to give place to bricks and mortar, must be looked upon with regret. A garden an acre or more in extent, well planted and enlivened with sparkling water and brilliantly-tinted flowers, is a thing to be desired even in the most salubrious of neighbourhoods; but, when such a garden lies within a stone's throw of the Royal Exchange or Bank of England, in the very densest and most crowded part of London, it becomes so intimately associated with public welfare, that its loss would be a real calamity. In such a position is the Drapers' Company's garden at the present moment. Although it belongs to one of the wealthiest of all the ancient City guilds, it has been advertised as a site for building purposes; but whether this project will be ruthlessly carried out, and another of the historical landmarks and breathing-spaces of London be wrenched from us,

attractive features in the garden, if we except the shade trees, is the central piece of water just alluded to. In this the common white Water Lily grows and flowers as freely as if it had been set in a limpid stream, o'erhung by Willows far away in the country. Anacharis and Alisma plantago also grow freely here, and the former is just now bearing its singular pinkish-tinted flowers more profusely than we ever remember to have seen them elsewhere. Very little is done here in the way of cultivation; the garden, therefore, owes its charm principally to such shrubs, trees, and old-fashioned flowers as can take care of themselves. Among other open spaces in the City is the garden of the Mercer's Company, also close to the Bank. In this there are some fine old trees, and there is a little garden, gay with flowers and shrubs in the quadrangle court of the Bank itself. Nearly three centuries ago Lord Bacon penned his celebrated essay on "Gardens," in his chamber in Gray's Inn, where even now an avenue of Elms represents those which afforded shade to the witty philosopher



View in the Drapers' Company's Garden.

remains to be seen. The subject is now engrossing great attention, the space in question having been a garden as long ago as the reign of Henry the Eighth. Our illustration gives an excellent idea of the present appearance of this time-honoured breathing space, which only the other day was honoured by the presence of Royalty at a distribution of prizes given for the encouragement of one of the most pleasing of all decorative arts—window gardening in towns. The garden itself is oblong in shape, and comprises rather more than an acre of green turf, surrounded by shady walks. In the centre is a large pond well furnished with water-plants. Poplars, Maples, and other trees and shrubs, grow well here; and there are some fine old Pollard Mulberries just now remarkably fresh and green, and bearing abundance of fruit. This is one of the best of all comparatively dwarf trees for city gardens, and one which deserves to be more generally used by town planters than it is. Here these trees look as if they had stood for centuries. One of the most

who could appreciate a town garden even in those days, when fresh fields and villages were within half an hour's walk of St. Paul's. Many of the old City churchyards contain some fine trees; but we would also like to see them contain better flowers than Golden Rods and Sunflowers. These gloomy-looking old burial grounds might easily, we should think, be converted into beautiful gardens, full of flowering shrubs and sweet-scented blossoms, thus adding considerably to the beauty of such open City spaces. Finsbury Circus, Tower Hill, and the Temple represent good city gardens; and within the walls of the Charterhouse there is also a large open space, which, however, we fear will soon be built on, though invested with so many old memories and lasting associations. As for the difficulties of gardening in the City they are purely imaginary. Hitherto, no pains have been taken in the planting of trees, or no good preparation made, and yet we could enumerate a whole arboretum of trees and shrubs that are now in perfect health in City gardens.

GARDEN DESTROYERS.

SNAKE MILLIPEDS AND CENTIPEDS.

THE myriapoda, to which the above insects belong, are divided into two great sections, the most important character of which, so far as the horticulturist is concerned, is, that the one (with a curious exception, where the mandibles are converted into a sucking apparatus) has its jaws or mandibles formed on the ordinary plan adopted in insects that chew their food, while the other has them formed out of its fore-legs into something half-leg, half-jaw, after the fashion of the nippers of spiders, with a sharp point and a hollow duct up their core, which is connected with a poison gland, as is the case with, at least, some of the spiders also. The former of these sections compose the Chilognaths (meaning jaw-jawed insects) or Julidæ, the latter the Chilopods (meaning foot-jawed insects) or Scolopendridæ. This difference in the character of their jaws is a very important one for the horticulturist, because by it he ought to be able to distinguish between his friends and his enemies. The Julidæ have their jaws perfectly adapted for chewing vegetables as well as any other matter. The Scolopendridæ have not; and the same principle that enabled Cuvier to determine the nature of his fossil vertebrates, whether carnivorous or herbivorous, equally applies to the organs of feeding in these insects. Both, to be sure, are equally under the ban of horticulturists, because both are found by them in injured roots of plants, and they credit both alike with the damage done, although the one actually did it or helped to do it, and the other only came there to prey upon the insects that were busy doing it. Curtis, although himself regarding the Scolopendras as carnivorous, mentions that the late Mr. Hope "attributed the Potato disease to the attacks of the wire-worm, and also to a small Scolopendra which he had found in myriads infesting diseased Potatoes at Southend," and Curtis adds that he himself "observed them in rotten Potatoes in August 1845; and in September 1848 *Geophalus electricus* was running about in every direction when the Potatoes were forked out." But an examination of the structure of their mouth and jaws, at once shows that the Scolopendridæ could never be vegetable feeders. There are two principles which it is safe to say Nature never deviates from. She never does anything without a purpose (although we may not always see it), and she never wastes her labour. If she endows an animal with any special structure or apparatus, it is for some end, and with the intention and for the purpose that the animal shall use it to attain that end. Now it is obvious that if the centipedes feed on the roots of plants, they must sin against both of the above principles in Nature's code. A poison bag and a poison tooth can be of no possible use to a herbivorous animal, therefore, as it would be a useless waste of apparatus to give it something which was of no use to it, the animal possessing these tools cannot have been intended to be herbivorous. The structure of the poison apparatus has been perfectly well ascertained, and the poisonous character of the secretion sufficiently proved by experience. As to the latter, De Geer, who was more practically acquainted with the habits of insects than almost any other naturalist of the last century, watched the proceedings of one species common in this country (*Lithobius forficatus*), and says of it, "I have seen a fly after being bitten by one of the *Scolopendræ* die almost instantaneously, which would seem to indicate that their bite is venomous," and Latreille drew similar conclusions from his observations on another which is common in France and the South of Europe (*Scutigera araneoides*). The larger the species naturally the more powerful should the poison be expected to be, and the bite from one of them causes pain and suffering, even to man himself. Brown, in his "History of Jamaica," says of one of the larger species (*S. morsitans*)—"This insect is reckoned very venomous; the prongs of the forceps are very strong, bending and pointed, which enable them to bite very hard, and they probably emit some venomous juice also, as some who have been bit by them informed me that the part bitten is very painful for two or three hours, and turns frequently of a livid colour. I have seen them often kill a cockroach with a single nip." We also may cite an actual example of the severity of the bite related to us by the sufferer. He was the manager of a sugar plantation in

Jamaica in the bygone days, when slaves were still slaves, and Jamaica still Jamaica, and in the "boiling season," when the juice of the cane is boiled to produce the sugar, it was his duty or practice to visit the boilers during the night to see that the fires were kept up and no intermission allowed in the process. On these occasions he merely threw on a dressing gown and thrust his naked feet into slippers while he took a hasty round through the works. While thus engaged he was once bitten on the leg a little above the ankle by one of these large centipedes. They are nocturnal animals, and of course most lively and alert at night. He described the pain as so excruciating that he almost fainted on the spot, and had to be assisted into the house, and some time elapsed before he got the better of the bite. As to the structure of the apparatus for poisoning the wound made by the bite, that was satisfactorily made out by Mr. Newport, the eminent entomologist, whose loss is still deplored by our older naturalists. Until he worked it out, the gland by which the poison of the centipede is secreted had not been shown. Leewenhock discovered at the apex of the mandibles an orifice that communicated internally with an elongated cavity, and he also saw a drop of fluid exude from the orifice, but he did not discover the true secreting gland—which, however, Newport did. He not only confirmed Leewenhock's observation in regard to the existence of a longitudinal opening at the inner margin of the apex of the mandible, but also traced backwards a sac with which it communicates, and discovered the gland of which it is the reservoir. It is to be observed, that the effect of the bite of a centipede in warm climates is very various; sometimes excessively virulent and painful, at others causing little inconvenience. It is, no doubt, in a great measure due to the state of health and constitution of the individual sufferer and his consequent susceptibility to disease; but, moreover, from experiments on venomous snakes, we now well know that the virulence of the poison and the degree of injury inflicted by it, may depend much on the circumstance, whether or not the animal has recently bitten and expended its venom on some other object; in which case, the injury occasioned is less severe; and, the reason is obvious, not only may the reservoir of venom be exhausted, but it may also be satisfactorily accounted for by what we now know of the manner in which the secretions of all glands are elaborated by the growth, bursting, and diffidence of successive series of epithelial cells that line the interior of these organs, the fluid contained within, and into which these cells and their nucleoli are resolved being the proper secretion. When this is expended too frequently, and the organ in consequence is excited by what may be called the stimulus of want, the secreting epithelial cells are hastened in their development, and the fluid into which they are resolved is imperfectly elaborated and its properties are doubtless less active.

Another curious secretion, which is produced by one at least, if not more, of the Scolopendridæ is a sort of phosphorescent light, which seems to exude from the body, and is left like a shining trail on the spots over which the insect has passed. It soon fades and disappears, seldom being seen for a longer space than a couple of feet behind the insect. *Geophilus longicornis* is the species whose luminosity has been most frequently observed in Britain, but there are reasons for believing that the property is common to all the section of centipedes known as Geophilidæ, and that it is evolved only at the breeding season. Mr. Newport mentions having found two individuals of this species on the ground in contact with each other at midnight, on the 25th of September, which shone almost as brightly as the glow-worm, for which, at the instant, he mistook them. On taking them into his hand the luminous matter was exuded and adhered to his fingers, and continued to shine for some time, like phosphorus. The individuals appeared to be able to give it forth at pleasure. This property appears to be common to some tropical, as well as European, Geophili. Oviedo, the friend and companion of Columbus, as quoted by Newport, mentions it in his account of the island of St. Domingo:—"There are in this island (St. Domingo) many kinds of Scolopendra or hundred legs; some are slender, and as long as one's finger, and like to those of Spain, and these bite and cause considerable pain. There are others of these worms about half the length of the finger and slender,

with many feet, and these shine much by night, and leave a light where they go, and may be seen 50 or even 100 feet off. Yet the whole animal does not shine, but only the joints where the legs spring from the body, and the light is very bright."

The horticulturist must regard all these centipedes as friends, but not so with the snake millipeds or Juli. These are general feeders, consuming both living and dead, and decaying animal and vegetable substances. The living animal matter on which they prey is slugs, small snails, earthworms, insects, and their larvæ and pupæ, and so far as that goes they may be regarded as friendly to the cultivator; but, on the other hand, they also feed on living plants, and many of them, such as Potatoes, Carrots, &c., are often seriously injured by their attacking their roots. It is a question, however, whether they are not sometimes unjustly blamed. They are, undoubtedly, often found in holes in our root crops, but it may be that the holes were already there before they came, and that they have only come to feed on the soft parts of a diseased or decaying root. A sound healthy tuber has, perhaps, too tough a coat for them to penetrate, but when they get into the juicy interior of soft pulpy roots, such as bulbs, the case is different; they can have no difficulty in making their way into them or in consuming the tender fibres of the roots of herbaceous plants.

It is very doubtful whether any means have been found of getting rid of these insects. Sprinkling soot and nitrate of soda over the land and watering it with lime water have been recommended, but apparently without much success. It is difficult to damage the insect without damaging the plant it is attacking too. So far as greenhouses, hothouses, and outhouses are concerned, they may be kept tolerably free from them by care, cleanliness, and the adoption of such traps as have been already referred to in Mr. Baines' and other papers in this journal; but the open fields are less under control. The commonest species are the *Julus terrestris*, a leaden-coloured species, something like a thickish wire, and *Julus guttatus*, a small long thread-like species, too minute and slender to allow anything to be done by direct manipulation. When viewed under a magnifying-glass this last species will be seen to be a very pretty little animal, like a pale thread about the thickness of a pin, with a double row of bright crimson spots on it, and when put in spirits it stains the liquid of a purple hue, to which it itself turns after death. It has no eyes, which has led to its being regarded as belonging to another genus. This is the species which most frequently forces itself upon the attention of horticulturists, and Lilies seem especially the object of its attacks. I, sometime since, received from Mr. George F. Wilson, F.R.S. (and placed in the collection of economic entomology now at Bethnal Green), preserved in glycerine, the scales of the bulb of one of his Lilies which was disintegrated by these little creatures, and a correspondent of this journal, not long ago, stated that on turning out some pots of *Eucharis amazonica* and *Vallota*, which were not thriving, he found, besides acari, a quantity of this species of snake milliped busy about the roots. Further investigation showed that the roots of some of the sickly plants had been perforated by these insects, which had also eaten their way into the body of the bulbs themselves. Curtis, from his own knowledge, specifies the roots of the Scarlet Runner, the roots of the Cabbage tribe generally, and the roots of young Wheat, as having been attacked, and Mr. Wilson Saunders, who, we all know, is not a man likely to be deceived in any point relating to horticulture or entomology, notes that he had observed that the young roots of his Heart's-ease were injured by this species.

There are several other British species of *Julus*, viz., *J. Londinensis*, *J. latestriatus*, *J. punctatus*, and *J. pilosus*, and along with them should be reckoned the little flat *Polydesmus complanatus*, which seems to be not far behind *J. guttatus* in its mischievous propensities.

A. M.

Mealy Bug on Stephanotis.—I should esteem it a favour if you could inform me how I can effectually remove mealy bug from a house devoted to *Stephanotis*. The house is 12 feet square, and covered with *Stephanotis*.—ROBT. JAMES. [Reply by Mr. Baines:—It is difficult to completely eradicate mealy bug when once it has got established, but, with perseverance, it can, nevertheless, be accomplished; and it is more easily destroyed on *Stephanotis* than on

most other plants, owing to its being able to bear, without injury, an application of "insecticide" sufficiently strong to kill the insects. Remove the plant from the wires, and immerse its head in Stevenson's "Abyssinian mixture," 8 ounces to the gallon; repeat this two or three times in the course of a fortnight. Paint the house thoroughly; limewash the walls; remove the surface soil from the beds, if any; also tan, or other plunging material; in short, leave no lurking places in which the insects or their eggs can find a lodgment. Dip and wash all plants in the "insecticide" repeatedly, as advised in the article devoted to this insect (see the last volume of THE GARDEN, page 141). This, if carried out, will effect its complete destruction.]

Rainfall in North Leicestershire.—In horticultural, as well as in other affairs, there is always a degree of consolation experienced when great cultural misfortunes are shared by the whole community. Individual and exceptional troubles from ungenial weather are rare, but when they do occur they seem to press with particular force on the unlucky sufferer. In the matter of rainfall I am made painfully conscious of being in a peculiarly unfortunate and exceptional position, without having enjoyed the advantages of a shower, in quantity more than enough to lay the dust, for nearly three months past. I read in the papers that refreshing rains have fallen in the north; your correspondent, Mr. Barnes, reports heavy showers in the south. West of this place thunder-storms and copious rains have filled the brooks and replenished reservoirs; and lastly, news comes from the dry east that rain has fallen in sufficient quantity to re-invigorate the languishing Roses. Above the river system of the country, uninfluenced by the east or west coast evaporation, near the very centre of the island, I find that at Belvoir, climatic circumstances exist, which, though sometimes satisfactory, are, in a season like this, painfully trying. The rainfall for 1873 for this district was $4\frac{1}{2}$ inches below its average amount, and every month of the present year has exhibited a deficiency. We registered in January 1.58, February 1.59, March 1.05, April 1.14, May 0.97, June 0.35, July 0.07; up to the 17th the total registered amount is 6.75 for a period of six and a half months. The above figures will at once tell rainfall observers the state of dryness to which we have been subjected. The temperature of the earth has increased considerably; a wine merchant at Grantham informed me that his cellar, which for twenty years had never exceeded 53°, had this year increased to 62°. Large and deeply-rooted fruit trees are so far affected as to lose a portion of their fruit. Hay has been cut one day and carried the next. There exists no present chance of securing a Turnip crop; late planted Potatoes have dwindled and failed; succession Pea crops languish for moisture; and watering alone keeps vegetable crops from dying up. The catalogue of troubles and trials to which we, in this little central portion in North Leicestershire, are subjected by the prolonged drought might be indefinitely extended, but quite enough has been told to establish my position—that we are in a dry and stormless region.—WILLIAM INGRAM.

The Heat and Drought.—These have been indeed serious, but let us hope that the worst is over. On July the 20th the thermometer stood at 90° in the shade; Apples were roasting on the trees, as were also Plums and Apricots, and Strawberries and Raspberries were being burnt up. Cauliflowers were drained of sweetness, and Lettuces were driven into seed-bearing by the fierceness of the sun's heat. St. Swithin, as Mr. Ingram, of Belvoir, humourously put it, has done nothing for us, and we ought to have appealed to St. Fiacre to have prevented our gardens being converted into herbariums. Such a deficiency of rain and excess of heat coming together have been most disastrous. Two lessons have, however, been taught us: One is the importance of deep cultivation; and the other is a better and larger means of storing water—or, in other words, to prepare for the drought. Store more water in the earth and out of it—the former by deep tith, the latter by larger tanks and deeper cisterns or wells. The expense of carting water on many estates now is one of the heaviest. The water is also often bad and dirty, and farmers and gardeners are haunted with the fear of the pond and well becoming dry. All this trouble might be averted by a larger storage of rain and other water. Deep tith, again, carries the crops through even such seasons as these, whereas, on shallow ground, the crops droop, and fail, and absolutely die by wholesale, for lack of water. Peas, on shallow land, this year are an absolute failure, seldom returning the labour, to say nothing of paying back the seed sown. On deeper tith they stand, and will yield half a crop. To carry on gardening without abundance of water is impossible. Water is the chief constituent of fruit and vegetables, the basis of sweetness of flavour, and tenderness of flesh in both; and everywhere the parched plants and trees are now pleading, with bended stems and flagging leaves, for water.—D. T. FISH.

THE KITCHEN GARDEN.

CUCUMBER CULTURE ROUND LONDON.

THIS is one of the most extensively grown indoor crops in market gardens, some growers devoting immense ranges of glass houses to its cultivation, while others grow it very largely in frames on sunk hot-beds. Some idea of the extent of its culture may be obtained from the fact that Mr. George Steel, of Fulham, has, annually, a field of frame-ground containing many ranges of frames with from 800 to 1,000 ordinary sashes; other market gardeners grow in proportion. From this field Mr. Steel sends to market weekly, during the summer, from 180 to 220 dozen of fruits. At one time Cucumbers were extensively grown out-of-doors in the market gardens round London: but for the last thirty years this practice has been abandoned. In the neighbourhood of Sandy, in Bedfordshire, however, they are yet grown on a large scale out-of-doors on ridges. Mr. Wm. Bagley, of Fulham Fields, has still the same variety of Cucumber growing in frames that his father used to grow out-of-doors forty years ago. The Telegraph, and varieties of it, are much grown in frames; so is the Syon House, Pettie's, and a few other sorts. These kind, together with the Rabley, Duke of Edinburgh (some excellent gardeners say that the Duke of Edinburgh is a good variety of the Rabley), the Hedsor (Mr. Murray, of Frogmore, informs me that the Hedsor is a tried and select form of the Telegraph), Sutton's Perfection, and a few others, are chiefly used for growing in span-roofed and lean-to pits or houses. For framework, the first sowing is made in little punnets or flower-pots, which are placed in hot-dung frames. When they germinate and are fit for potting-off, two plants are potted into a 6-inch pot, and the whole replaced again in the frames, keeping them near the glass. About the middle of February or in March, just as soon as some of the frames can be emptied of the Cauliflower or Lettuce plants that were wintered in them, the frames are moved aside, and trenches cast out 5 feet wide and 2 feet deep, and firmly filled with once or twice-turned stable litter. Over this some soil is placed, and the frames set on again. The earth that was cast out of the trenches almost levels up the space between the frames. When the heat subsides enough to permit of planting, a little more soil is introduced to the frames, and one potful (containing two plants) is planted under each sash, and one of the plants is trained towards the front of the frame, and the other towards the back. The sashes are then put on, and all is kept close for a few days, and, if need be, a little shading is also given by strewing some litter over the glass. Afterwards, until the plants have fairly begun to grow, no more ventilation is given than is necessary to prevent scorching in the case of bright sunshine. Another sowing is generally made to succeed the first one; but, as a rule, there are seldom more than two sowings made, and the second is only sown because all the frames would not be empty at one time, to be filled by the first sowing. Where great pains are taken the earliest plants retain their good bearing qualities as long as the latest sown ones. For several weeks after having been planted, they are protected at night by covering the sashes with litter, removing it next morning; indeed, this covering is not discontinued until the month of June.

When the plants have grown sufficiently to come into bloom, they are most attentively looked after in the way of regulating the growths, pegging down the vines, stopping the shoots at the joint beyond the embryo fruit, and in preventing an accumulation of superfluous growths. Throughout the day they are allowed to have plenty of air during the summer, but it is all taken off at night. As soon as the men come in the morning they tilt up the sashes a little, and if the heat of the day greatly increases, the sashes are tilted up a little higher still, usually about 3 inches. Watering is performed in the morning, and is given abundantly to those requiring it, whilst those that are not dry have simply a sprinkling overhead. In watering, one or more men are employed in carrying the water to one who pours it on. It is cold water from the tap that is entirely used, and I think that this is the greatest drawback to Cucumber growing that the market gardener has to contend with, as where one or several acres are covered with frames for this fruit, it would be next to impossible to make

tepid all the water required. Large hogsheads, however, are sunk here and there about the frame ground, and brick or cement tanks are frequently used for containing water, with which they are filled for the next day's use. Manure-water, made from guano, is sometimes given during the summer time, being applied through a fine rose overhead. This application is not only useful as a stimulant, but Mr. Hubbard, foreman to Mr. Bagley, of Turnham Green, assures me that he has found this manure-watering, when given overhead, to be of material benefit in destroying or preventing red spider as well as invigorating old plants. In reference to woodlice, Mr. Hubbard also informed me that he gives considerable sums for toads to people who fetch them chiefly from the neighbourhood of Wimbledon and Kingston. A couple of men are commonly kept at work in the frame ground, and on three days of the week (Monday, Wednesday, and Friday) they are employed in cutting fruits for market, and on the other three week days they are busy stopping and regulating the Vines. Should any young fruits exhibit a tendency to become crooked, they are put into cylindrical glasses open at both ends. These glasses are about a foot or fifteen inches long, and one and a half or two inches in diameter, and several thousands of them are employed in one large frame-ground, as one good and straight fruit is worth nearly a dozen small and deformed ones. The best of the crooked ones do for pickling. Cucumbers require sunny weather to set well, and in dull wet seasons they do not do much good, especially in the earlier part of the year. Should the summer be hot and bright, the sashes must be shaded a little, and this is done by strewing some rank litter over the glass; but many market gardeners, by way of economy of labour, paint the sashes with whiting, as in the case of glass houses.

By the 1st of August the plants will be getting exhausted; therefore careful attention is paid to thinning out old and bare vines, and encouraging young wood by means of stimulants, in the way of manure-water and coverings from cold; and in this way they will last good till September. In August some fruits are saved for seed, for if left sooner they would materially weaken the crop of marketable fruit. Should any "nosed" fruits be detected, these are sure to be taken care of, tied round with a string, and left till ripe, as they are certain to contain good seed. When the seed fruits become yellow and are cut, they are placed under sashes or on boards before the sun, so as to get thoroughly ripe and hard before being separated from the pulp. F.

TURNIPS FOR WINTER.

THE winter crop of Turnips is the most important of the year. Cooks prefer their Turnips off the ground, and not from the store heap, and it is necessary to sow a good breadth for the winter supply. Chirk Castle is the best variety with which I am acquainted for winter use, as it is very hardy, and as regards flavour and appearance among the best, being white and tender, though almost black outside. The date at which it should be sown for the winter crop must depend entirely on locality. Large Turnips are not wanted for culinary purposes; they should, therefore, be sown just soon enough to ensure their forming nice useable roots, about 4 or 5 inches in diameter. In the north, or in late districts, such a crop should be sown between the middle and end of June, but, in the south, sowing may be delayed till the beginning or middle of July. It is a good plan, however, to sow twice, or to sow also on a north border at the same time that a sowing is made in the open quarter. Turnips may follow early Peas, or any other crop not belonging to the tap-rooted section, for which the ground has been previously well manured. It is needless almost to say that the ground must be deeply and well broken up, and the Turnips should be sown as soon as the ground is ready, in rows 2 feet apart. When they have made their rough leaves they should be thinned out from 20 to 24 inches apart at least. This is wider than would be necessary for early Turnips, but, in winter, room between the plants is half the secret of success. When crowded, the leaves are soft and incapable of resisting frost; on the contrary they perish as soon as severe weather sets in, leaving the roots exposed, and as the latter are soft and watery, in consequence of the crowded state of the leaves preventing a free admission of air about them, the alternate frosts and rains of winter soon destroy them. When thus thinned, both roots and leaves attain a degree of hardness that enables them to withstand winters of a very severe character.

J. W. S.

THE ARBORETUM.

THE TULIP TREE.

(LIRIODENDRON TULIPEFERUM.)

THIS noble North American tree deserves a place on every lawn, as it seldom fails to develop itself into a stately specimen in any good, deep, well-drained soil. In habit of growth it closely resembles the common Maple, but its conspicuous orange-tinted blossoms and scaly fruits at once suggest its near affinity to Magnoliads, to which it belongs. The flowers are not unlike those of a Tulip, and hence the name by which it is most generally known. The broadly-expanded leaves, instead of being palmate as in the Plane, are irregularly four-lobed, and somewhat resemble a saddle in conformation; in the United States, indeed, the vernacular name Saddle tree is derived from this peculiarity, just as we derive our popular name from its Tulip-like flowers. Our illustration gives an excellent idea of the flowers, foliage, and fruit. The flowers are profusely borne during the summer months; and, although not strikingly ornamental on the tree on account of their being somewhat hidden amid the ample foliage, when cut, and arranged in a vase with the foliage that naturally belongs to them, they have a distinct and striking appearance. In America this tree is said to form specimens from 100 to 150 feet in height, but in this country it rarely exceeds 70 or 80 feet. There are some fine specimens at Fulham Palace, in the Royal Gardens, Kew, and in other places, although well-grown trees of it are by no means common. In the old arboretum at Chiswick, there used to be two specimens of this fine tree, one having much larger and brighter coloured flowers than the other; and, doubtless, other varieties of it exist where plants are raised from seeds. All through the summer the foliage is of a fresh pale green; and, in the autumn, it dies off a brilliant golden-yellow. Striking effects might, therefore, be obtained by grouping it with *Quercus coccinea* or the purple-leaved Beech. In addition to its ornamental properties, it is valuable as a timber tree, the wood being firm in texture and capable of taking a fine polish. It is, however, most valuable in this country as an ornamental tree, and, for that purpose, its distinct and noble port commends it at once to the notice of intending planters. In London gardens, where the tree flowers very well and grows fairly, the foliage dying off in autumn affords very striking effects. Its value is more apparent where stately specimens are found.

ON PRUNING FOREST TREES.

By ROBERT PHILIP, Forester to John I. Chalmers, Esq., of Aldbar.

I BELIEVE there is not a branch of the forester's work on which more diversity of opinion exists than on pruning forest trees; nor is there any one operation in the cultivation of timber which foresters seem so determined to conduct on the old principle as pruning. It is lamentable to see fine healthy trees, young and old, spoiled in their timber and retarded in their growth, by the way in which they are treated in too many instances. The great diversity of opinion on pruning which exists among practical men, has had a most prejudicial effect on the minds of proprietors of plantations; for those who have

taken an interest in the management of their woods have been bewildered by these opinions, when they turned their minds to the improvement of them. One writer advises to prune none, designating it as an unnatural operation; another holds pruning to be everything in the management of wood; while a third would prune so long as he can do so by merely pinching off the terminal buds with his finger and thumb. One writer recommends close pruning; another foreshortening; while a third recommends foreshortening, thinning out, and cutting close off from the bole all the branches which appear to be robbing the main stem of its due nourishment. It is little wonder that gentlemen have turned away from the subject in bewilderment, some leaving the matter in the hands of their forester; while others, afraid to risk the spoiling of their trees under such unsettled principles, have refused to have them pruned at all. This is how the matter stands with some of those who have turned their attention to the subject; but I fear too many have taken no interest in the matter at all; and until gentlemen do take an interest in all the branches of the forester's operations, arboriculture will never reach to that elevated position which it ought deservedly to hold among the economic sciences. Books, essays, reports, &c., have been written and published on pruning; but seeing that so much diversity of opinion exists, which has produced a baneful effect, instead of

Flowers, foliage, and fruit of the Tulip tree (*Liriodendron tulipifera*).

realising the object aimed at, we must look in some other direction for improvement. I should say, seeing that we cannot agree in theory and practice on pruning, let the plantations under the charge of the writer be examined, and if he has had full scope to carry out the theory or practice which he recommends in his writings, then it could be possible to judge of its merits; and let it be reported on by the judges, who ought themselves to be intelligent, practical men of experience. By this, or some such method, a knowledge of the system of pruning which will produce the cleanest and soundest timber, may be attained at once, and prevent that delay which must necessarily be submitted to before it can be tried and the result ascertained, to say nothing of the risk of destroying good trees by pruning on a wrong principle. Until some such plan of ascertaining the best system be adopted, I fear all the

essays and books which can be written on the subject will tend little more to settle the matter than what has been already produced. I shall now proceed to give my own method of pruning, and its results.

Nearly thirteen years ago I was sent to prune a quantity of young Oaks and other trees, which were from 3 to 4 feet high, and had been planted a number of years. These trees were very unhealthy, from some cause unknown to me; for they were planted in good soil and situation, but they were literal bushes without any leader, and covered over with dead spray. I looked at the plants, going through them and examining them, and was fairly at a loss to know what to do with them. However, I commenced to cut off all the dead spray, and select the shoot most suitable for a leader to the plant; I then cut in or foreshortened all the rest of the contending branches. In this way I went over the plants and left them; and the first year after being so treated, they pushed out fine healthy young shoots, and formed good leaders. They have been two or three times pruned since, but slightly, as they were intended to keep thin on the ground. The ground on which part of them grows was afterwards enclosed as a poultry-yard, and this has been in their favour no doubt; but independently of the ground being kept clean by the poultry, the first pruning had a most beneficial effect upon them, for the ground was not enclosed for some time after it took place, and now they are as healthy trees as could be wished, but will never make clean timber, from not being regularly pruned, which was the wish of the proprietor. Almost the whole Oak and other hardwood trees on this estate have been very much neglected, both as regards pruning and thinning, when young; for many years, and, until the time I have mentioned, no pruning or anything like rational principles had been performed.

I have found, on cutting up hardwood of from eighty to a hundred years of age, that it had been close pruned at one period of its growth; and the Beech trees, in particular, have been very much damaged by the way in which the work had been performed. They had been pruned close to the stem, and a large number of branches taken away at once; for I have seen a plank with a large number of black decayed marks in it, not more than from half-an-inch to 1½ inch in diameter; and the same thing is to be found in every other species of hardwood tree when cut up. But there is one exception, in the case of the Scotch Fir which had been served in the same manner; not one of them which had been pruned have left decayed holes in the tree, but the reverse; the wound has healed over, and fine clean wood has formed, leaving the knot fast in the plank when sawn up for use. Much has been written in favour of and against the pruning of Scotch Fir, but from what effects of it I have seen, I am satisfied that it preserves clean sound timber, nor could I detect any injury done to the growth of the tree; the concentric rings or annual growths were as large after the pruning as they had been previous to it, taking the slower growths of the tree naturally, as it becomes older, into account. I am of opinion that all dead wood ought to be pruned off trees wherever it occurs. In the case of some acres of Larch trees which had a large quantity of dead branches on the lower part of the trees, I knocked them all off as high up as a man could reach with the handle of his axe, and this has proved of great benefit to the health of the trees. I by no means recommend cutting off close to the tree green branches of any of the Pine tribe; but, if it were not for the expense of the process, I would prune off every dead branch as soon as I observed it dead. I have shortened branches on Fir, Spruce, &c., and have seen no bad effects follow: this is absolutely necessary in the case of nurses to hardwood. Pruning hardwood trees is an operation which I consider indispensable, if we would have sound clean timber. It too frequently happens that we have to deal with neglected trees, and there is a stage at which trees may have arrived, when pruning to any extent would be useless. The time which I consider trees ought to have their first pruning, after being planted where they are to remain, is, when they show proof that they have established themselves in the soil, and not till then, for I have never found any benefit to the plant arising from pruning before this time. Trees pruned when they have not established themselves are apt to push out young wood; but it rarely happens, in this quarter at least, that the young wood ripens properly; and the frost and cutting winds in winter kill back a great portion of it, and when young wood is killed back, it is, in my opinion, a means of rendering the plant unhealthy for a time, which retards rather than facilitates its growth. I never cut any of the branches close for a considerable time, and never cut any close but those next the bottom of the tree. I have ample proof of the bad effects of thinning out branches on a tree, for those left just grow the faster from having more light, air, and nourishment. I shorten all contending branches, or those that appear to be appropriating too much of the substance which ought to be deposited on the main stem, but keep all those which keep within proper bounds,

and by this method the strong branches are checked; for shortening, if not carried too far, will check the strong branches, as I have ample proof. If I find a strong branch with lateral shoots or spray upon it, I cut back the branch to some of the smaller branches, and endeavour to leave as little appearance of pruning as possible. When the trees are large and neglected, it is impossible to do this; but I prune very little off trees after they arrive at this stage; all I consider necessary to be done to them is to balance their tops, and preserve one leading shoot if the tree is not at the height required; and this is done on the foreshortening principle, but by cutting the branches at a greater distance from the bole, and only such of them as are straggling, and liable to be broken by storms. Many fine trees are destroyed for want of a few of these straggling branches being shortened. I make no difference in my mode of operations when pruning for timber, my aim being to produce as much sound clean timber in each tree as the nature of the soil, situation, and climate, will permit; and this applies equally to all kinds of hardwood. I do not find it necessary to prune oftener than once in two years, except the young trees—that is, till they are beyond reach of the pocket-knife—these I endeavour to have pruned every year; but pruning, if too frequently or too severely applied, will prove hurtful to the tree. It is not uncommon for healthy trees, the first year after pruning, to push up 3 to 5 feet of a leading shoot, and when so much growth is produced in one year, the tree makes little or no progress to height the following season, but furnishes the previous year's shoot with side branches. Some pruners evidently believe that a tree will produce timber as fast with few branches as with many, from the way they treat their trees, some thinning out the branches, others cutting away a large number of them close to the stem at one operation; but I always endeavour, by shortening, to keep the branches as small in circumference as I can, and have plenty of them; and if I thin any, it is for the purpose of checking the strong branches, and may cut them further back than the ordinary outline of the tree, and by this means the wounds are in a great measure hid. By this system of pruning I have Oaks 30 feet and upwards in height, and no branches on them more than 2½ inches in diameter at their base, and few of them so thick. These trees have not been so regularly pruned as I could have wished, but they show what a little assistance will do for them. I have no particular proportion of head to the stem, but find that trees increase in thickness fastest when they have about two-thirds of their whole height covered with branches during the whole period that they are increasing in height, but ought to diminish to between one-half and one-third of the height for a top, according to the sheltered or exposed situation they may be in, care being taken not to draw them up too fast, and then allow them to get top-heavy, as this would bring on too much strain both on root and stem; and this in soft soils is very injurious to the tree. Every tree has its own habit; and the pruner must, in a great measure, adapt himself to the habit of the tree he has to deal with, and not force them into any shape which may please the fancy of the operator. We can only assist Nature in her operations, and if we would study her operations more closely than we do, there is no doubt but we would arrive sooner at practical conclusions. One tree, such as the Poplar, has a natural tendency to keep to one leading shoot, and to keep its branches within a comparatively narrow space; while the Oak has the opposite tendency if left to Nature; its habit is to have a short stem with a wide-spreading top, which may be a beautiful object in certain situations, but certainly not profitable as a timber tree. Pruning is so closely connected with, and dependent on, judicious thinning, that attention to it is of great consequence; for to thin the trees to wide distances will cause them to throw out strong side-branches, and creates additional work to the pruner; but by keeping the trees pretty thick on the ground, the branches are confined within reasonable limits, and consequently kept from increasing to a large size. The method which I adopt is, by thinning and pruning, to keep the trees standing quite clear of each other, to allow free circulation of air, and admit the light all round them, both of which are essential agents in the growth of trees; and by this means I manage to keep the trees in a healthy growing state, and prevent the branches from becoming large, which always detracts from the value of timber, except where bends and "knees" are formed fit for shipbuilding; and I fear there are too many of these gnarled, ugly trees in this country at the present day, which, if left alone, as they are past much assistance from the pruner, will keep plenty of them in the country, without allowing the young trees to be lost in the same way for a considerable time to come. The tools which I use in the operation of pruning are a strong pocket-knife, handsaw, a saw with the teeth reversed, and the pruning-shears; the last two are fixed on long poles, and they save much loss of time in climbing; for trees farther advanced a ladder 14 to 18 feet will be found necessary.—*Transactions of the Scottish Arboricultural Society.*

FRUIT CROPS IN SCOTLAND.

Roxburghshire.—Floors Castle, Kelso.—The fruit crop in this neighbourhood is, on the whole, a fair one, notwithstanding the very unpropitious weather which we had in the early part of the year. The only exception is the Apple (in some districts, and with me), which is very poor. Some of the trees, however, such as Atkins's No. 1 and Ecklinville, are producing a fair crop. Apricots on south walls are laden with fruit, which promise to be fine in quality; the Breda is approaching maturity, but is small, a fault made up by its earliness. Our Apricot trees were only protected with Silver Fir branches; as the growth advanced, the leaves of the Fir dropped off, giving light and air gradually; this, I think, the best of all kinds of protection of a temporary character. I have tried all other schemes of covering, but none beats this as regards simplicity and effectiveness; and, at the same time, it is cheap and procurable in most places. Spruce Fir is nearly as good, but the branches do not lie so closely and snugly on the trees. Plums were protected in the same way on south walls; but on north walls, where we have our Golden Drop, and from which we get a supply till the end of November, we do not protect at all, as the trees flower sufficiently late to be out of the reach of frost; hence, I think walls of this aspect should be planted with other fruits besides Morello Cherries. Plums on walls are an excellent crop, and standards of Victoria are laden with fruit. Damsons, again, are fruitless, owing, no doubt, to their early flowering and the frozen ordeal which they underwent. Strawberries have been very plentiful and fine; but, as I think, wanting in flavour. The kinds which suit us best are Keen's Seedling, President, Prince of Wales, and La Constante, and these form our indoor supply as well. New plantations are made from those fruited indoors every year; the year after they yield large crops, and frequently a sprinkling the current year in autumn. Currants and Gooseberries are only a middling crop, fully half of the crop having dropped in consequence of frost. We are very much exposed to north-west winds, which, however, we are endeavouring to shut out by means of young wood plantations. I attribute the loss of our crop of Apricots on a west wall to this exposure. The east side of this wall is covered with Ivy, and I am training the Ivy over the top, and am in hopes of forming a natural coping for the trees on the west by simply stretching a wire along to support the ends of the Ivy, allowing it to hang down here and there along the front. The good old dwarf Raspberry called Northumberland Filbasket is a never-failing crop. Morello Cherries are abundant, as they always are; but table kinds are scanty and not good. We have no outdoor Peaches or Nectarines, but those indoors are, and have been, plentiful and fine, especially Nectarines, which are really more useful in every way than Peaches, as they carry better and keep longer after being ripe. Had we more Apples, our supply of fruit would have been, on the whole, satisfactory.—HENRY KNIGHT.

Midlothian, Dalkeith Park.—Apples here are a moderate crop; the cold easterly winds which prevailed while they were in flower considerably thinned them; the trees are clean and healthy, and such fruit as they are bearing of good size and quality; Pears, an average crop, both on walls and standards, and the fruit being free from spot and of a fair size has a fine appearance; Peaches and Nectarines on the open walls are hardly an average crop, and the leaves are suffering from blister and aphides; Apricots are fully an average crop; Plums and Morello Cherries, a moderate crop, but the trees suffered much from aphides during the dry weather in June; Strawberries, Raspberries, and Currants, a good average crop; Gooseberries, a partial crop and very much infested with aphides; Filberts and other Nuts a light crop. On the whole, this may be considered to be a fair average fruit season in this locality. We almost entirely escaped the severe spring frosts that played such havoc amongst the fruit in other districts.—M. DUNN.

Oxenford Castle, Dalkeith.—Apples here are a good average crop—Lord Suffield, Ecklinville, and Oslin, being heavily laden, but in the case of some kinds the fruit is dropping a good deal; Apricots are a heavy crop, though three-fourths were thinned off; the fruit is swelling off satisfactory, the borders having been mulched all the season; sweet Cherries are under the average, best on west aspects; Morello kinds are very heavy, the fruit is, however, ripening prematurely, and is, in many cases, dropping off; Currants, red, an average crop; white, good; black, medium, fruit not so large as usual; Gooseberries are so heavy a crop that the bushes have required propping up, and the fruit is large and fine; Plums (Green-gage section) under average; Victoria, heavy, both on walls and standards; Damson (Scotch), very heavy; Pears are a fine crop, healthy, and swelling well on walls, the borders of which have been mulched, Hessel and Croft Castle also good as standards; Raspberries, rather under the average, foliage browned as if burned, and fruit under the usual size; although the ground was mulched, I

presume last year's wood was unripe; Strawberries here on heavy soil, a very heavy crop, but where the soil is light a poor crop; and the plants are suffering from drought; the varieties grown here consist chiefly of Keen's Seedling, Prince of Wales (Ingram's), La Constante, Viscountess Hericart de Thury, British Queen, and Duke of Edinburgh (Moffats). Some things are suffering a good deal from want of rain, but, in general, our fruit crops are satisfactory. Our soil being a strong heavy loam, or nearly clay, resting on 40 feet of blue clay, does best under a roasting season. Our practice is to mulch extensively and never to dig amongst our fruit trees, bushes, or Strawberries. Some growers for market, in this neighbourhood, on lightish land, have very poor crops, especially Strawberries, which are rather a speciality in this locality.—A. ANDERSON.

Renfrewshire.—Blythswood.—Round this neighbourhood, Apples and Pears, though a fair crop, are nothing compared with what was expected from them when in bloom. The withering winds in May so checked the trees, that three-fourths of the blossoms failed to set, and in many cases half of those which did set, have since dropped. Strawberry crops are plentiful and fine—indeed, all small fruits are abundant; the Gooseberry caterpillar, however, has caused more annoyance in some places than has been the case for the last year or two. Outdoor Peaches are nearly a failure, though they flowered profusely; Apricots are better than usual; Plums, with the exception of Victoria, are very scarce; and Cherries, with the exception of Morellos, are also a thin crop. Among Apples, Lord Suffield and Stirling Castle, are bearing exceptionally heavy crops; Strawberries are fine, and Gooseberries abundant; Currants are plentiful and clean, which was far from being the case here these last two years; Raspberries are also fine, having been much benefited by the late rains. I may add, that Apricots are never a satisfactory crop out of doors in this neighbourhood, owing, I believe, to the atmosphere being so damp; but Peaches, until the last two seasons, have been abundant, and have ripened admirably.—JOHN METHVEN.

Dumfriesshire.—Drumlanrig.—The fruit crops in this district may be set down as follows:—Apples, Plums, and Cherries, plentiful; Pears, average crop; Peaches, moderate; Gooseberries, Currants, Raspberries, and Strawberries, heavy crops and fine in quality. This season is considered to be the driest and warmest which we have had since 1826.—DAVID THOMSON.

Perthshire.—Drummond Castle, Crieff.—Peaches on the open walls here are half a crop, and the same may be said of Apples and Pears; Plums are a good crop; Gooseberries, Currants, and Raspberries, first rate.—RODERICK McDONALD.

Scone Palace.—In the gardens here, Apples are a failure; Pears, partial; Plums, variable—some trees none, others require thinning; Morello Cherries and Apricots, a full crop; Gooseberries, Red and White Currants, below average; Black kinds, nearly a failure; Filberts, a full crop on some trees, on others few. In this neighbourhood the general outdoor crop of fruits is partial; Gooseberries, in some localities, very scarce, in others, here and there, a full crop; and the same may be said of Currants; Apples and Pears, partial, here and there good, in other places scarce; Apricots and outdoor Peaches, good; Strawberries, which are here a field crop, are reported to yield at the rate of a pound to the yard, a money value of from £60 to £121 an acre. Some cultivators only take two good crops from them, then trench 3 feet deep, and re-plant the same crop again and again, harvesting, on an average, from 2 to 3 tons an acre.—JOHN HALLIDAY.

Dupplin Castle.—The bloom on fruit-trees of all kinds was very abundant; but late spring frosts not only destroyed much of it, but also the fruit that was set. Apricots are a splendid crop here, although many in the neighbourhood have been damaged by frosts. Plums are a very scarce crop, Denyer's Victoria being the only variety that is bearing what may be called a crop. Apples are also very scarce here; but, in some places, these are good crops. Pears, too, are not half a crop. Strawberries are abundant, and extra good in quality. Cherries, with the exception of Morellos, which are excellent, are very thin. Filberts are an average crop. Small fruits of all kinds very plentiful here; but, in some other places, very few. Peaches, in the open air, none; in houses not heated, a good crop.—JOHN BROWNING.

Taymouth Castle.—Small fruits, Plums, and Cherries are abundant hereabouts; but Apples and Pears are below the average.—ROBERT MONTGOMERY.

East Lothian.—Whittingham, Prestonkirk.—Apricots, extra large crop and looking well; Apples, average crop; Cherries, very large crop and well flavoured; Currants, of all kinds large crop and good in quality; Pears, a moderate crop; Peaches, none grown out of doors here, but where they are grown they are an average crop; Plums, of all kinds are an extra large crop, except Green Gage, and even of that there is a fair crop; Gooseberries, a large crop and well flavoured; Raspberries, average crop; Strawberries,

plentiful, but owing to want of rain when the fruits were swelling, they are not so large as they might have been, but their flavour is good.—JOHN GARRETT.

Ayrshire.—Culzean.—The fruit crop here this season is pretty good, especially Currants, Gooseberries, Raspberries, and Apples. Strawberries have been poor here; but, in some gardens in this district, they have proved a good crop. Wall fruit, especially Pears, is very scarce; dessert Plums, except Victoria, not more than half a crop; Cherries and Apricots an ordinary crop; standard fruit is more abundant, especially Apples and Pears. All small fruits have suffered very much this season from blackbirds and thrushes.—DAVID MURRAY.

SUPPLEMENTARY ENGLISH REPORTS.

Sussex.—Petworth.—Apples are abundant hereabouts on high ground, but scarce on low lying districts; Pears are very plentiful; and of Plums there are wonderful crops; as regards Damsons, every old stump of a tree has some fruit on it. I have had to thin most of my wall trees and all my pyramids. Both Plum and Cherry trees are much blighted, although on the latter there are heavy crops. Strawberries are plentiful and the fruit fine; Raspberries, good; Gooseberries and Currants of all kinds abundant, but the fruit is smaller than usual; Apricots are plentiful, especially on some old trees that were removed last autumn; Peaches and Nectarines, good; Filberts and Cob Nuts, fair crops; Walnuts, plentiful; Figs, a fair crop; Mulberries, plentiful; Cranberries, Quinces, and Medlars, good crops; outdoor Grapes are plentiful, and the Vines in most places are looking strong and vigorous. I never saw so many aphides, both black and green, as this season; almost all trees are affected by them more or less.—GEO. BREESE.

Hereford.—Shobden Court, Leominster.—Apples are scarce with us here, except in a few favoured places; Pears are fair crops; Nuts, very few; Apricots, in general, fair crops, though, in some instances, the earlier varieties suffered from frost on the 9th of March, when the trees were in full bloom; Plums are good; Cherries have borne fair crops, but, in some cases, they have been so much blighted as to make them useless; Figs are thin and have dropped considerably; Strawberries have been abundant, and good in flavour, but the late kinds have suffered from the continued drought. We have had very little rain here since March; on the 23rd of May we had a few hours' nice rain, but only a small shower or so since. Raspberries, Currants, and Gooseberries have borne large crops. This season we have been fully three weeks earlier than usual, owing, doubtless, to the unusually warm weather which we had in April. Strawberries are nearly over, except a few Elton Pines, as are also bush fruits, except such as are netted for dessert.—J. MATTHEWS.

Surrey.—Deepdene, Dorking.—Apples here are a failure; Apricots are a fair crop; Peaches and Nectarines, moderate; Pears, plentiful; small fruits—Gooseberries, Currants, and Raspberries, fine crops; Strawberries, scarcely an average crop; Figs, moderate; Nuts, scarce.—J. BURNETT.

Portnall Park, Staines.—All fruit crops in this neighbourhood suffered considerably from frost, and the gardens here, being very low, suffered severely from the same cause. Fruits on walls are but thinly distributed, with the exception of Cherries, of which we have an excellent crop, but rather small in size; on espaliers we had a splendid "set," but scarcely a fruit is now to be seen, all having suffered so severely from frost; crops of Gooseberries and Currants are very thin; Strawberries and Raspberries have been abundant and good, both in size and quality; on standards, with few exceptions, the crop has failed.—THOS. MAY.

Worcestershire.—Madresfield Court, Great Malvern.—Owing to the sharp frosts which occurred on May 9 and following nights, hardy fruits, at that time most promising, suffered severely; and, in many cases in low or damp situations, in addition to the loss of the crop, the young growth was cut back. Blight and disease have, consequently, been prevalent among the stone fruits generally, many of the Plum orchards being very short, both in point of fruit and foliage. Wall fruits are better, the fine summer-like weather which we had in the latter part of April having caused the foliage to expand sufficiently to materially shelter both the flower and young fruit. Apricots are, perhaps, more abundant than any other fruit, and are now ripening fast; but, in consequence of the extreme drought, they will not be so large as in more genial seasons. Apples, though partial, are good in sheltered situations; Apricots, a good crop, bright and clean; Cherries, on standards, thin; Morellos, very good; Figs, light, injured by frost; Nectarines, good, and trees clean; Peaches, a good crop; Pears, on standards, partial, on walls a heavy crop; Plums, very few on standards, on

walls a heavy crop; Strawberries, early kinds injured by frost, late crops good; Gooseberries, good; Currants, clean, but crop short; Walnuts, entirely destroyed by frost; Coppice Nuts, a light crop; Filberts, none.—W. COX.

Middlesex.—Syon House, Brentford.—Fruit crops here are, on the whole, barely an average; except, perhaps, Cherries, which have been abundant. Of Apricots we have a fair crop; and the same may be said of Peaches, Nectarines, Pears, and Plums. We have a good quantity of Apples, both on standards and on dwarfs. Strawberries have been plentiful; but rather small, owing to the first fruit having been cut off by frost, and the occurrence of dry weather when they were swelling. Of Raspberries we have had but half a crop, and about the same of Gooseberries and Red and Black Currants. Walnuts here are an average crop; but, in some places in this neighbourhood, they were much injured by spring frosts.—JOHN WOODBRIDGE.

THE WILD PLUMS OF KANSAS.

[Some time ago, it was stated that a traveller in Central America, while passing over the sandy plains of Kansas, met with dense thickets of small Plum trees, not larger than our Gooseberry bushes, bearing fruit of immense size and fine flavour. Several inquiries for further information respecting these Plums not having met with any response, our occasional contributor, Mr. Jackson Gillbanks, who takes so active a part in all branches of natural history, wrote to America to ascertain whether or not such Plums existed, as small bushes bearing large and delicious fruit would be a grand acquisition to both our gardens and orchard houses. This has produced the following interesting letter on the subject from Mr. Ed. Thompson, of Kansas.]

"Lawrence, Kansas, U.S.A., July 3, 1874.

"Dear Sir,—Your letter, relating to the wild Plums of the plains of Kansas, has again directed my attention to them. The head waters of the Kansas River and many streams emptying into the Platte, abound in wild Plums of many varieties and colours; where the soil is fertile and water plentiful, the trees grow to the height of from 6 to 10 feet, and the fruit of many kinds is large and pleasant to the taste. There is one variety of white Plum quite as large and of as good flavour as Bolman's Washington, a kind generally cultivated and much valued in the Eastern States. Another kind resembles the St. Catherine in size and colour. Among the sand hills of the Arkansas, the trees do not reach the size that they do further north, being, in fact, mere bushes 3 and 4 feet high, growing in dense clumps or thickets. The fruit, however, appears to be equally large and luscious, and during the early fall my men have frequently brought baskets into camp, which were exceedingly palatable, either raw or cooked. In the fall of 1872, after we had experienced severe frosts upon the head waters of the Republican, on our way into settlements, upon the north ford of the Soloman, we found a deep arroyo, with a spring, whose sides were filled with Plum trees in full bearing, their sheltered position having apparently delayed the fruitage and protected them from frost. I shall be this year south of the Arkansas river, in the extreme south-western part of this State, and if the Indian's untutored mind does not suggest his raising my hair, I will make further observations upon this subject, the result of which I shall be happy to communicate. (Signed) "EDWARD D. THOMPSON."

POMOLOGICAL INSTITUTE, AT REUTLINGEN, NEAR STUTTGART, WURTEMBERG.

THIS establishment, under the able superintendence of Dr. Edward Lucas, undoubtedly takes a prominent position among horticultural schools on the Continent. Having been a year at the Institute, I will try to give some account of it. It was founded by Dr. Lucas in 1860, and now extends over 21 acres of land. Since its commencement, 696 pupils from various countries have been received. During the winter of 1872 and summer of 1873, there were 71 scholars from the following states:—Baden, 3; Bavaria, 11; Palatinate, 6; Hesse, 1; Pomerania, 2; Brandenburg, 6; Silesia, 3; Province of Saxony, 3; Westphalia, 1; Rhine Province, 1; Hanover, 1; Holstein, 1; Hesse, Nassau, 3; Reims, 2; Saxony, 4; Wurtemberg, 7; Moravia, 2; Tyrol, 1; Transylvania, 1; Switzerland, 6; Denmark, 1; Sweden, 2; America, 2; Africa, 1. As indicated by the title of the institution, pomology is one of its leading features, but instruction in every branch of horticulture is given—Vine-culture, drawing, physics, and chemistry, being taught by competent professors. In the arrangement of the garden, a main walk, 110 yards in length, is planted on each side with a great variety of fruit trees in the form of cordons, palmets, &c., and on the right and left of this walk are the model gardens, where the best sorts of fruits are to be found in the shape of

great pyramids. Farther on is the nursery, properly so called, where, every year, large numbers of fruit trees are trained. Not only is the theoretical instruction at Reutlingen excellent, but, also as regards the practical part, it would be difficult to find a better establishment. From the large number of fruit trees grown, everyone has the best opportunity of practically perfecting himself in fruit-culture. There is also a good geological collection, tools of different countries, an excellent library, artificial fruits, &c. The flora of Reutlingen and environs is a rich one, as the town is situated among high mountains. The botanical excursions which are often made, either with Dr. Lucas or his foreman, are exceedingly interesting, and an excellent herbarium can be formed by those who are desirous of doing so. Not only for its horticultural instruction is Reutlingen recommended, but, owing to the great number of scholars from different countries, the best opportunities are afforded for learning other languages. It is a pity such institutions are so rare!

A. M. C. JONGKINDT CONINCK.

Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

THE LARGE VINE AT THE VICEREGAL LODGE.

It is now some years since we first noticed and detailed the history of what is now widely and familiarly known as "The Large Vine at the Viceroyal Lodge." The life story of this very remarkable Vine was then a short one; for, be it remembered, that though a wonderful Vine, it is very far from being an old one. In fact, a decade had not then nearly passed from the time Mr. Smith took it—a poor sapling, struggling for life—in hand. Even then it was a horticultural wonder, filling a curvilinear lean-to house, some 70 feet in length and 15 feet wide, and carrying a magnificent crop of Grapes, quite a picture to look at. Since that time the house has been made a half-span, and has had its breadth thereby considerably increased. Large increase of space was thus afforded for further extension, and so skillfully was the Vine induced to avail itself of it that it soon entirely occupied it; and the long lines of luscious clusters hung as thickly there as in the older portion of the house. It may be as well to mention here, for the information of those who have not seen this Vine, or remember the particulars previously given, that the stem enters at one end of the house, and from this seven main rods are conducted horizontally and equi-distant from one another, in perfectly straight lines, till further progress is arrested where they reach the opposite end of the house. The wood of these main rods is about the thickness of a ship's cable, and the spurs on either side disposed with the utmost regularity, each rod forming a perfectly straight and strongly-defined line fringed with a double row of beautiful stout green foliage from among which depend on either side, as if strung with almost mathematical accuracy, the long lines of sable pendants which are the crowning glory of the Vine. It is now just about eighteen years since Mr. Smith undertook the management of what was then a weakly plant, and is now a giant in its way; and we are inclined to think it, taking all in all, one of the finest examples of successful Vine culture, and perhaps the very best example of what is called the extension system to be met with anywhere. Year after year, without a single blank, it has borne splendid crops of highly finished fruit, and the present year's crop forms no exception, save in one respect, and that is—that as regards size of bunch, berry, and aggregate weight, it will be the finest which this noble Black Hamburgh has yet ripened. The bunches number probably 400 or thereabouts; many of them, we calculate, will weigh 3 pounds or so, and the average is 2 pounds or over; the aggregate weight of crop, we suspect, little short of 7 cwt. The bunches are just now colouring, and by-and-bye, when they put on their full sable habiliments and rich bloom, the big Vine will be a sight worth looking at—a triumph of cultural skill, upon seeing which he would be cold and phlegmatic, indeed, who would withhold from Mr. Smith his warm appreciation of his skill, and the remarkable results of it before him.—*Irish Farmers' Gazette.*

A large Crab Tree.—When lately visiting (said Sir R. Christison, at a late meeting of the Edinburgh Botanical Society) a friend at Kelloe House, in the parish of Endrum, a few miles eastward from Dunse, I was shown a Crab tree, which appears to me to deserve being added to Mr. McNab's memoranda of large trees in Scotland. Crab Apple trees are more frequently met with in hedge-rows in Berwickshire than anywhere else in Scotland where I have been; possibly, because nowhere else in Scotland do hedge-rows abound as fences. The tree in question, according to the information supplied by an old man upon the estate, stood with several others in a hedge-row, but the hedge-row was cut down to improve the highway. This particular tree was, however, so large, even at that time, very many years ago, that it was left standing in a convenient triangular space, in front of

Kelloe Gate, where it does not interfere with the roadway. It has now a trunk of 8 feet in girth, is 50 feet in height, branches freely, and was covered with leaves when I saw it. The fruit was clustered, as in the Cherry. In the spring the whole tree was one sheet of white flowers; but little fruit formed on it, in consequence of the sharp frosts in May. It is well known in the surrounding country, whose inhabitants visit it from a considerable distance when it is in flower. It continues to be perfectly healthy in every part.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

THE time has now arrived when it is generally considered advisable to commence the propagation of the various species of plants used for the purpose of bedding out in the flower garden, &c.; but in this part of the country, and no doubt in many other parts, there will this season be found a difficulty in obtaining material wherewith to form cuttings, more particularly as regards the different kinds of Pelargonium, which, generally, play so conspicuous a part in the ornamentation of the parterre, and it may, in some instances, be necessary to delay for a time the propagation of this family of plants. But there are several other varieties of bedding plants, of each of which it is only necessary to have a few store pots to preserve during winter, in order to produce cuttings for the purpose of increase during spring, such as the Verbena, Petunia, Fuchsia, Lobelia, Coleus, Iresine, Heliotrope, Ageratum, Alternanthera, &c.; therefore, if cuttings of these can be obtained now they should be inserted without delay in pots some 6 or 8 inches in diameter, which should be well drained, using a soil composed of about equal parts of river or silver sand and finely-sifted leaf soil, putting in each pot an inch or two of somewhat rough soil upon the Moss which covers the drainage. The pots should then be filled with the prepared soil, and the cuttings inserted, watered, and placed upon cinder ashes in a frame or pit, which should be kept quite close and moist for a few days, and shaded from bright sunshine. When the cuttings are fairly rooted, they should be at once exposed to the open air night and day, when they will become well-hardened and robust; and may so remain until there is danger from frost, when they should be placed in a greenhouse or pit during winter, and if introduced into genial warmth in spring, say early during the month of March, they will then produce abundance of cuttings which will root freely, and are much to be preferred to autumn-struck plants for planting in the flower beds. It may, however, be necessary to observe, that such plants as the Alternanthera, Iresine, Coleus, Heliotrope, and the dwarf variety of the Ageratum, being somewhat tender, will require to be wintered in a stove temperature. It is also quite unnecessary to pot off singly any of the varieties of bedding-plants which have just been named, as all of them will succeed equally well, if not better, if they are merely shaken from the store or cutting pots and planted at once in the flower-beds. The case, however, is somewhat different as regards the various sorts of bedding Pelargoniums, as they should all, if possible be struck early in the autumn, placing four cuttings in a 4-inch pot, and these should be potted off singly in spring. This should, if possible, be done with all the zonal varieties, and it is more particularly necessary to do so with the variegated zonal or tricolor sorts, which should, if possible, be strong well-established plants when turned out, as their development in the flower beds is not so rapid as that of the green-leaved zonals, and the various Ivy-leaved sorts, which will generally succeed well if struck as cuttings in 4 or 5-inch pots, and separated when planted in the flower-beds. The various varieties of this section of the Pelargonium family, form excellent bedding plants, and do not, as yet, appear to be appreciated according to their worth or adaptability for this purpose. They, however, form exceedingly effective bedding plants, and are very suitable where the soil is light and dry, and will be found to succeed well during seasons and in situations in which the Petunia and Verbena, &c., would entirely fail. Among the best bedding varieties in this section of plants, are the old Crimson Ivy-leaved, the pink-flowering variegated variety, Duke of Edinburgh, Bridal Wreath, the last-named forming one of the most beautiful and effective white beds which can be imagined, together with some other varieties which are hybrids between P. lateripes and zonal species, such as Willsii, Willsii roseum, Lady Edith, and Dolly Varden; the last is a variety with beautifully zoned bronzy foliage and pretty pink-magenta coloured flowers. Cuttings should also be struck, as soon as they can be obtained, of the more free-growing sorts, such as Peltatum elegans and L'Elegante, which are useful for training upon the handles of rustic baskets or drooping from the sides of vases, &c. Continue to regulate the develop-

ment of climbing plants of all sorts, such as Roses, Honeysuckles, Clematises, Tropæolums, and similar plants, which are so useful and ornamental when trained in the form of standards and pyramids, &c. On account of the drought which has so long prevailed, comparatively little mowing has been of late required, but lawns should, nevertheless, have constant attention in that way, as well as in extracting weeds and sweeping off the decayed leaves which are already falling rapidly from the trees and evergreen shrubs; this is, of course, to be ascribed more to the prevailing dry weather than to the—as yet—but slightly advanced season. Let all recently-transplanted trees and shrubs have every necessary attention, and carefully avoid allowing them to become too dry; as this, if allowed, will be sure to have an injurious effect upon recent root formation and will considerably retard the recovery or re-establishment of the plants. The mulching around the stems of such trees should also be covered with large stones or flints, in order to improve its appearance, and prevent birds from disturbing it.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

All who wish to keep up a continual supply of cut Roses throughout the autumn, should lose no time in removing all old flower-stakes, which should be cut back to the first leaf bud. Thin out all weak shoots, and keep the trees clear of mildew by means of occasional dustings of sulphur whenever it shows itself. Give plenty of water, in order to encourage second growth. Remove all suckers, and tie up all shoots of strong-growing varieties, in order that heavy rains in autumn, should we get any, may not break them down. When Roses are properly attended to, as to removing all faded flowers, a good supply of fresh blooms may be obtained out-of-doors from June until November. On no account cut away strong growths of climbing kinds or of Tea Roses, as on that growth much depends as regards a good supply of bloom the following season. Those who have only a limited space for Roses, and who wish to make the most of their autumn flowers when cut, may effect this as follows:—Get some small phials, place the stalks of a single Rose and one leaf in the bottle, and plug them in with a small piece of sponge. By selecting one bloom only, and placing it in a phial, as just directed, the side buds are saved for succession, and double the quantity of bloom is left for furnishing that otherwise would be available for that purpose. Such small bottles (1½ inch long) may be used in almost any kind of flower stand, and Roses last well cut and put into water in this way.—H. G.

Hardy Flowers.

During the last few years a race of very charming bedding Violas has been introduced, remarkable for varieties having pretty tints of blue and violet, some flowering early enough for the spring display, others being later, and coming in with the summer bedding plants. The immediate progenitor of this race was *Viola cornuta* Perfection, so named because reputed to have been a seedling from the well-known *Viola cornuta*. This *Viola* Perfection has pale violet-blue flowers borne on stiff erect stalks; the habit of growth is dwarf and free-branching; but, as it does not flower till May, it is only adapted for summer beds. It supplies a tint of blue of great value in the flower garden—better than any other bedding plant can furnish it. One of the most useful of the varieties that have sprung from this is *Viola* Bluebell. This is a very early and free-flowering form, producing a large number of violet-blue flowers, commencing in the month of March and continuing onwards till November. This is equally well adapted for spring as for summer bedding, and, in fact, comes into bloom as early, if not earlier, than any other bedding Pansy or *Viola* in cultivation. It is comparatively new, and, therefore, not in general cultivation; when it becomes better known it will be as commonly employed in the decoration of our gardens as the blue *Lobelia*. *Violas* *Euchantress*, *Magnificent*, and *Sensation*, are all derived from Perfection, but, like their progenitor, bloom only during the summer, not the spring months. These are also darker than the parent, and are very useful for massing, for ribbon lines, and also for mingling with silvery-leaved foliaged plants. This is a charming combination, as, for instance, a bed of the old *Mangles'* variegated *Geranium*, or one of the new variegated Ivy-leaved varieties, mingled with a blue *Viola*; for here there is foliage and flowers in pleasant contrast. Another charming *Viola* is *Princess Teck*. This has pale greyish-lilac flowers, which are produced in abundance, and it affords a colour perhaps only obtained in the *Verbena*, and then only imperfectly so. Those who plant their beds in the autumn or early winter, to have a spring display, should use for the purpose the divided plants that have flowered the previous summer, as the old wood will flower earlier than the young growth, and plenty of young wood will be furnished to keep up a succession of bloom. For summer work, cuttings struck during early spring should be used, as they make fine young flowering plants during the summer, and also do well when divided for the spring garden. All *Violas* throw up a

large number of young shoots from the roots, and are thus constantly forming a dense growth; and they should be encouraged to do this as much as possible for the sake of a succession of bloom.—Quo.

Indoor Plant Department.

Fuchsias and Lilies now constitute the principal flowering plants in conservatories and greenhouses. Gladioli in pots are also very ornamental indoors, as are also different kinds of Bell-flowers. *Humea elegans* is likewise a useful plant in conservatories. Annuals, such as *Schizanthus*, *Zinnias*, *Celosias*, *Balsams*, *Gomphrena globosa*, and several kinds of *Amarantus*, also contribute considerably to the decoration of cool houses. Where *Amarantuses* are wanted for succession they should be kept in frames, and re-potted as they require that attention, taking care, however, not to over-pot them. *Trachelium caruleum* is one of the most useful of flowering plants. In order to keep up a succession of *Balsams* a reserve stock of them should be kept in cool pits or frames; from these the blooms should be picked off as they appear, until within a week or two of their being wanted for use. Hard-wooded plants put outside to ripen their wood and to make room for gayer subjects indoors, should receive any little attention they require in the way of supplying them with water. Show and fancy *Pelargoniums* cut over, some of them pretty well into the old wood, and such as are the most shapely, to a joint beyond that to which they were cut back last year, should be placed on a shelf and kept dry, or laid on their sides out-of-doors. In stoves wood-ripening must be encouraged; no more shading should, therefore, be used than is absolutely necessary. Among the gayest plants at present in stoves are *Allamandas*, which, in all cases, blossom best when their roots are allowed to ramble in some bed or border of good soil, and when their shoots are trained along the roof. Thus circumstanced they give more satisfaction than when tied around pot trellises. Of *Achimenes*, *Gloxinias*, and other *Gesneraceous* plants, several are still in bloom, but such as have done flowering should be laid on their sides to prevent their roots becoming injured by drip; such *Gesneras* as *exoniensis*, *zebrina*, and others of that section, should be encouraged to come in succession, being admirable plants for indoor decoration. In re-potting these the soil should not be shaken from the roots, only the crocks should be removed. As some of the earlier-started *Caladiums* show symptoms of decay they should be removed to some out-of-the-way place and gradually dried off. Some venture to keep them in a green or growing state throughout the winter, but that is not good practice, though occasionally it may succeed. Plants of *Clerodendron Kämpferi* that have done blooming should be set aside and gradually dried off, whilst those coming into bloom should be supplied occasionally with manure-water. This *Clerodendron* strikes freely from cuttings of mature wood inserted in spring in a brisk heat. Those put in last spring should now be strong enough to be re-potted in 6-inch pots, and may be kept in a stove temperature. Rotten manure, yellow turfy loam, a little peat, and a good admixture of sharp sand suit them admirably. Pits and frames will now be becoming filled with cuttings of *Heliotropes*, *Verbenas*, and some of the finer kinds of *Geraniums*. For *Ageratum*, *Gazania*, and *Calceolarias*, there is yet time enough; indeed, they are seldom put in until the others are rooted, lifted, and potted, or put thickly into boxes. *Chrysanthemums* should, for the most part, be placed in sheltered positions on a bed of ashes, out of doors; still, however, a few should be kept in frames, especially young plants, to which plenty of air should be given. Many of the most forward *Cinerarias* will now need a shift from small pots into 4 or 6-inch ones, using a good deal of well-seasoned rotten manure in the compost. Seedlings should be re-potted as they require it. A sowing of herbaceous *Calceolarias* may now be made; some prefer to sow late and to encourage the seedlings for a while with heat, while others sow earlier and treat them more hardily. *Auriculas* should be re-potted and placed in frames that face the north. *Cyclamens* should also be re-potted and placed near the glass in frames or pits, and syringed every day. A gradual increase of moisture may be given at the root. Pansies should be propagated by means of cuttings inserted in sandy soil in frames, and well shaded for a time.

Orchids.

Dendrobiums, *Cattleyas*, *Lælias*, *Oncidiums*, and other plants which have completed their season's growth, will now be benefited by being removed to a dry airy atmosphere, and may be more fully exposed to the sun, so as to thoroughly ripen their pseudo-bulbs. This treatment does much towards inducing a free flowering disposition the following year. It is a good plan to utilise sunny Vineries for ripening off the growth of *Dendrobiums* and other Orchids on blocks or baskets. Thorough ventilation is one of the most important aids to good cultivation at this season, and in fine weather the ventilators may be opened early in the morning and closed as soon after mid-day as the temperature will admit. The cool houses should

have a free circulation of air night and day, and at this season, when nearly all the species are making a vigorous growth, it is nearly impossible to keep the atmosphere too moist and cool. Potting may still be proceeded with in the case of strong-growing plants, and copious supplies of water will be needed where plants are making a vigorous growth. *Phalænopsis* may be gently dewed with a fine syringe daily, early enough to allow the foliage to become dry before the evening. Keep all pots, pans, benches, and floors scrupulously clean, and repeated spongings with clean tepid water will also greatly assist in giving a healthy appearance to the plants. It often happens that where much aerial moisture is maintained, some plants of succulent habit show a tendency to spot. This is especially the case with *Phalænopsis*, and, as soon as this is discovered, the part infected should be removed with a sharp knife, and the wounded part dusted with a mixture of sulphur and powdered charcoal, to which a little quick-lime may be added. A pinch of the latter alone is one of the best application in the case of putrid spot, as it seldom fails to burn out the fungoid disease and stay its ravages.—F. W. BURBIDGE.

Indoor Fruit Department.

Pine Apples, just shifted, should be plunged in a bottom-heat of about 85°, and no water should be given them until they begin to form fresh roots. Plants setting, or such as have just set their fruit, should have some good fibrous loam placed around the necks of the stems so as to encourage the emission of new roots. Muscat Grapes require a brisk temperature to ripen them well, and afterwards a proper means should be taken to thoroughly ripen the wood. Second crops of Figs promise to be good; abundance of water should be given them, and syringing should be still continued. To Melons, a high temperature should be maintained and a little air kept on night and day; those ripening require the border and atmosphere to be kept rather dry. Cucumber frames should have their linings renewed. Where crops of Peaches and Nectarines have been gathered, such trees as are in pots should be set outside on a well-sheltered border. Some, however, do not turn out their pot-trees, but keep them always indoors, giving them as much air as they possibly can. Tomatoes in pots should be kept as near the light as possible, and should be supplied occasionally with weak manure water. Chillies in fruit-houses and frames should also be kept near the glass. To these, green-fly is a great enemy; they therefore now and then need a dip into a mixture of diluted tobacco-water in which a little soft-soap has been dissolved.

Hardy Fruit.

Figs in the open air should not have their side shoots stopped. The most profitable mode of culture is to allow a free growth. Back the trees up against a house or wall; tie in the leading shoots until the space is covered, and allow the side shoots to grow freely, so as to form half standards. By this method a great many shoots of medium strength will be produced, well adapted for fruit bearing. The best mode of preventing excess of growth is a poor border, or no border, and a good crop. Out of doors, I prefer no border for the roots of Fig trees. Plant them on a gravel walk, under a paved yard, in the poorest, commonest soil in the garden, and leave the tops almost to Nature, and you are sure of a crop. Prepare a rich border; apply the knife vigorously to the top; thin and display the shoots in an artistic manner, and you will reap wood fit for faggots, and leaves fit for sun-shades, but little or no fruit. Reverse all this as above directed, and the growth will be weakly, the leaves of small size, and the fruit plentiful. Neither do I approve of protecting the tops of Fig trees in winter. On an average of seasons fruit will be much more abundant on the trees left to shift for themselves. Protection weakens the hold of the fruit on the trees so much, that, when it is removed, the fruit is apt to drop, and even the tender leaves and shoots to suffer. But the non-stopping of the shoots, and their non-protection in winter, are, to some extent, linked together; for, by not stopping the wood, the embryo fruit left at the base will continue so small that it resists the winter frosts; whereas, were the shoots stopped, the second crop of Figs would be developed so far that the winter or spring frosts would kill them. It is obvious that only one crop of ripe Figs can be gathered in a season from open air trees; and that crop is the Figlets that cling to the branches throughout the winter and spring, and grow into size and lusciousness, through June, July, August, and September. While the crop of one year is growing that of the next is being formed at the axils of the leaves and the growing shoots in front of them, and in order to keep these small enough to pass safely through the winter, the shoot itself must not be stopped. If there is any deficiency of fruit-bearing wood, that may easily be increased by beheading the side-shoots as they start into growth next year. The stopping will then make little difference to the earliness of the fruit, while it will furnish several fruit-bearing shoots set with Figlets for

another year instead of one only. All weak shoots that have little or no fruit on them may now, also, be cut back, quite home to the main branches; this will ensure a supply of fruit-bearing shoots nearer to the main limbs of the tree than they otherwise would be, and provide a supply of wood against a necessity that may sometimes arise under this system of free and easy Fig culture, viz., that of cutting back to get nearer to the wall—the source of protection and cause of superior warmth; for, of course, it would be possible to travel so far from the wall by this mode of culture as to make the trees share the climate of standards, instead of half standards only as intended. The same mode of training, and little or no pruning, answers well for the growth of Figs on roofs. For the latter, separate trees should be planted, and for this reason, that, if the head of a tree covering a wall is once allowed to run at will over a roof, the chances are that it will become headstrong. The top will run away with the strength and fertility of all the other parts of the tree. The roof becomes productive at the expense of the walls. To avoid this, plant rider Figs, that is, those with a long clean stem to reach up to the roof, and then let them break, and train and cover as you would a wall. There is no other safe mode of covering a roof with Fig trees, for, if trained thinly over tiles or slates, the fruit will be burned before it is ripe. The long clear stem is also an aid to fertility, whether from the distance between root and top and the length of sap vessels traversed by the sap, or from some other cause, it is not easy to say.—D. T. FISH.

Kitchen Garden.

Now that rain has fallen copiously, finish planting late Broccoli and all kinds of Winter Greens. Walcheren and Veitch's Autumn Giant Cauliflowers, should also be planted for late autumn use on well-manured land, in an open position. Sow a good breadth of Prickly Spinach for standing the winter; also, the Giant Rocca and White Tripoli Onions. Parsley may yet be sown for late spring picking; it will not run to seed quite so soon as that sown earlier. Make a good sowing of Endive, of both the green curled and Batavian varieties for winter. The earliest sown crop will now be full grown, and portions of it should be tied up and blanched in succession; the blanching may easily be effected at this season by covering each plant with an inverted flower pot, with a bit of Moss twisted into the hole to keep out wet, air, and light. Plants from the successional sowings, now that rain has come, should be planted out on well-prepared land, 1 foot apart, at intervals of two or three weeks. This is a good time to sow a good breadth of Red Stone and Orange Jelly Turnips for winter use; they may be sown on land from which early Potatoes have been lifted, without any further preparation of the soil, beyond levelling, raking, and working up a fine tilth. It will be best to sow in drills; and it will be a great advantage to the crop if about three or four pounds per rod of super-phosphate, mixed with about twice its bulk of wood ashes or burnt earth, are sown in the drills with the seeds. The season has hitherto been too dry for artificial manures to have much effect; but we shall now probably have a period of cooler, moister weather. Chervil is always in request; therefore, make a sowing for winter; and, when the plants are large enough to prick out, fill a box or two with the thinnings to place in a frame for use in bad weather. Provision should also be made to have a supply of Sweet Marjoram in a green state through the winter. This is best done by filling a box or two with the young plants in May, and keeping them pinched back; but plants may be lifted now from the border, shortened back, and planted in boxes. It bears forcing well for the production of young green shoots in winter; and, as it strikes freely from cuttings in heat, if desired, a stock of young plants may be worked up in spring for planting out. Early Horn Carrots may yet be sown to supply small young roots in autumn and winter. Tomatoes will now require a good deal of attention as regards the removal of all superfluous growth from the main stems, and stopping all leading shoots one leaf beyond the clusters of fruit. This must be carried out persistently, if good-sized well-ripened fruit is desired. The blanching of early Celery usually requires about four or five weeks; and, as there is not much chance of watering it effectually after earthing up has commenced, it is better to delay this process till the Celery is nearly fully grown, or till within a month or so of its being required for use—then earth it up the full height at one operation. Ridge Cucumbers will now require a good deal of attention as regards the proper regulation of their growth and pinching out the points of the longest shoots; in all cases mulching should have been resorted to during the late dry weather. The season during which Cucumbers can be successfully grown in the open air in this country is usually a short one; therefore, every expedient that has a tendency to make the growth healthy, regular, and continuous, should be adopted. Box edgings may still be cut, and advantage should be taken of this change in the weather to have all gravel paths firmly rolled down.—E. HOBDAY.

THE HOUSEHOLD.

A CHAPTER ON TOMATOES.

I SEND you my ways of disposing of the Tomato, which I call the vegetable of vegetables. If any of your housekeepers can add to, or improve this list, I trust they will do so. I am by no means prejudiced in my own mode of doing things; and, if I can aid any one in using the Tomato in many ways to advantage, I shall be content.

Stewed Tomatoes.—I shall say nothing about stewed Tomatoes, as it is presumed everybody knows how to stew them. One thing, however, should be remembered—that nothing should be mixed with the pure article, which should pass through a sieve or colander before being sent to the table, though some mix with it a little chipped Onion well boiled.

Tomatoes au Plat.—Butter a warmed metal or earthenware plate that will stand the fire, add pepper and salt, and cut, in the flat direction, as many Tomatoes as, when placed with the cut sides downward, will cover the plate. Cook before the fire, placing a tin reflector behind. When slightly browned, they are ready. Three or four eggs may be broken into a cup and placed in the Tomatoes three or four minutes before they are removed from the fire.

Tomato Catsup.—Take ripe Tomatoes, and scald them just sufficient to allow you to take off the skin; then let them stand for a day covered with salt; strain them thoroughly to remove the seeds. Then to every two quarts add three ounces of cloves, two of black pepper, two nutmegs, and a very little Cayenne pepper, with a little salt. Boil the liquor for half an hour, and then let it cool and settle. Add a pint of the best cider vinegar, after which bottle it, corking and sealing it tightly. Keep it always in a cool place. *Another Way.*—Take one bushel of Tomatoes, and boil them until they are soft. Squeeze them through a fine wire sieve, and add half a gallon of vinegar, one pint and a half of salt, two ounces of cloves, quarter of a pound of allspice, two ounces of Cayenne pepper, three tablespoonfuls of black pepper, five heads of Garlic, skinned and separated. Mix together, and boil about three hours, or until reduced to about one-half. Then bottle without straining.

Tomato Omelets.—Beat six eggs, mix two tablespoonfuls of flour in a little water, and add same salt and pepper; peel and chop very fine four Tomatoes, stir this altogether. Put a bit of butter half the size of an egg into a frying-pan, heat it hot, turn on the mixture, stirring it all the time until it begins to thicken; then let it stand to brown three minutes, lap it half over, slip it on a dish, and send it to table very hot.

Pickled Tomatoes.—Always use those which are thoroughly ripe. The small round ones are decidedly the best. Do not prick them, as most receipt-books direct. Let them lie in strong brine three or four days, then put them down in your jars, mixing with them small Onions and pieces of Horseradish; then pour on the vinegar (cold), which should be first spiced; as for peppers, let there be a spice-bag to throw into every pot. Cover them carefully, and set them by in the cellar for a full month before using. *Another Way.*—Take small, smooth Tomatoes, not very ripe; scald them until the skin will slip off easily, and sprinkle salt over them. After they have stood twenty-four hours, drain off the juice, and pour on a boiling hot pickle, composed of one pound of sugar to every quart of vinegar, and two teaspoonfuls each of cinnamon and cloves. Drain off the liquid, scald it, and pour it on them again, every two days for a week, and they will require no farther care.

Tomatoes in a New Fashion.—The following method of preparing Tomatoes for the table, we are assured by one who has made the experiment, is superior to anything yet discovered for the preparation of that excellent article: Take good ripe Tomatoes, cut them in slices, and sprinkle over them finely pulverised white sugar, then add claret sufficient to cover them.

How to Make Tomato Figs.—Pour boiling water over the Tomatoes in order to remove the skins; then weigh them and place them in a stone jar, with as much sugar as you have Tomatoes, and let them stand two days, then pour off the syrup, and boil and skim it until no scum rises. Then pour it over the Tomatoes, and let them stand two days, as before, then boil and skim again. After a third time they are fit to dry, if the weather is good; if not, let them stand in the syrup until drying weather. Then place on large earthen plates or dishes, and put them in the sun to dry, which will take about a week, after which pack them down in small wooden boxes, with fine white sugar between each layer. Tomatoes prepared in this manner will keep for years.

Tomato Preserves.—Take the round yellow variety as soon as ripe, scald and peel; then to 7 lbs. of Tomatoes add 7 lbs. of white sugar, and let them stand over night. Take the Tomatoes out of the

sugar and boil the syrup, removing the scum. Put in the Tomatoes and boil gently fifteen or twenty minutes, remove the fruit again and boil until the syrup thickens. On cooling put the fruit into jars and pour the syrup over it, and add a few slices of Lemon to each jar, and you will have something to please the taste of the most fastidious.

BETTY.

A Successful Mode of Drying Fruit.—I have several times noticed that successful and deserving process of fruit and vegetable drying—the Alden—now in full operation at San Lorenzo and five or six other places in California. This process is now fast becoming generally known. It removes the water from animal and vegetable substances in a few hours, by pneumatic evaporation. The conditions of the natural or common method of drying are such, that decay commences before evaporation begins, and continues through every stage of the process, until all the essential flavours, which constitute the charm of freshness, are lost. The most delicate fruits and berries, and the ordinary products of the farm and garden, are, when subjected to this plan, in from two to four hours deprived of water, and become also greatly reduced in bulk (for instance, three ounces of Pears dried by this process would, by the ordinary method of preserving, have weighed two pounds—a great item in the expense of transportation), and can, at any time, by simply soaking in cold water, be restored to their original flavour, form, and substance.—W. E. HOOPER.

THE WAIL OF SMELFUNGUS.

It was an old Mycophagist
Who sadly did complain
He had his favourite Toadstools missed
From lengthened want of rain.
His brow, with discontent o'ercast,
A rueful aspect wore;
Said he, "There has no Fungus passed
These lips this month and more!"

"Saint George's Mushroom, one or two,
I found in early Spring;
Agaricus gambosus, due
With swallows on the wing.
Lycoperdon, too, *giganteum*,
Two light repasts supplied;
And then, alas! no more would come
From pastures too soon dried.

"*Marasmius Oreades*,
Which wet in season brings,
The buff Champignon, that one sees
In verdant elfin rings,
When seared were all those circles green,
No seeker's eye could see.
What disappointment that has been
To fairies and to me!

"The *Amanita* changing hue,
Rubescens, blushed me none;
The *Russula heterophylla*, blue,
And puce, I found not one.
And as for the *Boletus edulis*,
So plump and fat,
A Fungus which I love to see,
I found no more of that.

"The *Fistulina hepatica*
Grows out of the Oak tree,
Like liver to behold, but, ah,
Has not yet grown for me!
Coprinus, cke, *comatus*, fails;
Atramentarius, too;
For ketchup neither aught avails,
So what am I to do?

"I can but sigh for heavy rains,
And thunderstorms implore,
With *Agarics* to make all the lanes
And meadows teem, galore.
The farmers might wet weather weep,
But I hot summer moan,
Forbidden by the drought to reap
A harvest of my own."—Punch.

OBITUARY.

WE regret to announce the death of Mr. John McMorran, many years superintendent of Messrs. Backhouses' nurseries, at York, and an accomplished horticulturist, and amiable man both in business and in private life.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

ARCHITECTURE AND FOLIAGE.

What to do with Temple Bar.

It appears that the entrance to Victoria Park from the station on the North London Railway consists only of an insignificant wicket gate; a most suitable site, therefore, presents itself at that point for the re-erection of the old barrier whose history is so intimately bound up with many stirring events connected with the metropolis. The removal of the Marble Arch from the Mall, in St. James's Park, where it was a patchy obstruction, to its present situation, in which it forms a handsome and suitable decoration to one of the principal entrances to Hyde Park, is a wholesome precedent. It illustrates the hint just thrown out, and seems to point to the propriety of a somewhat similar change. In its present state, Temple Bar cannot be allowed to remain where it is. Whether in consequence of the deep foundations dug in its close vicinity in preparation for the new Law Courts, or from the continuous jarring of the continuous traffic, it is unnecessary to inquire, but certain it is, that the structure has, within the last week, shown unmistakable signs of menacing disintegration. To re-erect the materials upon the same spot, upon a new foundation, will certainly never be permitted, after all that has been urged concerning the impediment which it has so long proved to the traffic of the Strand and Fleet Street. Such a course appears entirely out of the question—while, to destroy the old monument, by simply carting away the materials as used-up rubbish, would certainly be an act of vandalism. The first claim to the relic has been urged in favour of Victoria Park; and, therefore, if any competition for the old City gate should arise, the east-end park should, as it seems, have the preference, unless sound reasons can be urged to the contrary. The park in question already possesses architectural relics of a somewhat analogous character in the massive stone alcoves that once formed part of old London Bridge. These structures are of solid and fairly good design, and contrast pleasingly with the foliage with which they are now surrounded. They are, in fact, in their present locality, far more agreeable objects than they were in their bleak and unsupported position on London Bridge; and the old archway that has so long formed the highly inconvenient western entrance to the City, will, in like manner, if removed as proposed, be seen to far greater advantage in the midst of green turf and noble foliage. It has considerable merit in point of design; indeed, in that respect is undoubtedly superior to the wretchedly meagre and slavish copy of Greek art exhibited by the Marble Arch, which owes all its beauty to the material of which it is composed, and all its interest to being the first attempt to erect a structure entirely of marble in our unfavourable climate. This view will be rendered manifest when the old Bar is placed in a better situation; not jammed tightly in by dingy houses, but well supported on either side by the living green and grandly irregular forms of fine trees. From a gardening point of view the particular placing of the structure in Victoria Park becomes a point of considerable interest; the kind of foliage, and its extent, by which it ought to be supported would form a very interesting study to an accomplished landscape gardener, as well as the solution of the question whether its façade should be placed flush with the roadway surrounding the park, or at a certain short distance within the boundary, and approached between plantations of well selected trees, which might be planted so as to expand by degrees, and form masses of supporting foliage on either side. These considerations may be premature, inasmuch as the Corporation of the City of London may, in its wisdom, determine to strengthen, or even re-erect Temple Bar, where it now stands tottering, but suggestions are better made too soon than too late. It is, perhaps, needless to add that many positions in our west end parks would be equally suitable for this structure or any similar one.

THE SHAKESPEAREAN GARDEN.

GARDENERS usually love flowers purely and solely because of their beauty; artists love them (though in their inmost hearts they love trees far better) because they afford subjects in the imitation of which they have scope for their charming powers; the poets, the true and genuine poets, as distinguished from versifiers, rhymesters, and paper-stainers, love them, as the gardeners do, for the sake of their sweet complexion, but, at the same time, because of the pictures they supply to the mind. And this, perhaps, is the noblest purpose for which flowers were created. The gratification of the simple sense of seeing is a very inferior enjoyment compared with the delights of which the intellect is capable; and these last, in many of their richest forms, are derived from plants and flowers. The eye must needs be pleased in the first instance; it is the living instrument by means of which the mind talks with Nature. The error, too common among mankind, is to rest content with what it says as to prettiness of forms and colours, and to inquire no further. It is quite a mistake to suppose that seeing a thing, or even owning a thing, is exhausting it; that we have done, for instance, with the Rose, when we have learned its botanical structure, the conditions of its most excellent blooming, and the chances it may have of winning at some grand competitive flower-show. Such knowledge is very pleasant, very proper, useful, and creditable; but, if we go no further, we are only playing on the outside, and are like little children on the shore, who pick up the shells and crimson weeds left in the brown wrinkles of the sand by the retiring water, unconscious of what is found by those who sail afar in ships. The poet teaches us how to see beyond the surface. Every man, therefore, who would get the full value out of his trees and flowers, should try to cultivate a poetical spirit. Some few of our fellow-creatures are rich in this respect, just as some are rich in mechanical ingenuity, others in aptitude for mathematics, or for legislation, or some other valuable but not superior art; and these rich ones are the poets, properly and legitimately so called. Whether skilful or not in rhyme and metre does not matter; they are poets in the fact that they see farther than the other people do; they make common things glorious; they show us that the little and the unpretentious is no less worthy than the large and imposing; they let us into the inner life and the sweet and loveable meaning and purpose of trees and flowers.

Shakespeare, with whose plants and flowers I am about to deal, is pre-eminently the poet of Nature; for that matter so is he pre-eminently the poet of the heart, no man ever having sounded the depths of the affections so thoroughly and so accurately as he has done. At present it is enough to consider him in his capacity of lover of the woods and fields; as the man who has made more frequent and more truthful mention of the elements of vegetable nature than any other whose writings the world possesses; and who, in matters of correct teaching, is far before many a learned lecturer or college graduate. That a gardener can do without him, of course, is quite true; so can he do without Linnaeus and De Candolle. That he can dispense with that critical knowledge of his works, which is conventionally called "understanding Shakespeare," I have no objection to concede. This, however, is a very different thing from dispensing with Shakespeare as a tutor, which no intelligent gardener will ever do. In the little articles I propose to write on the flowers and plants of which he makes mention, I shall constantly regard him, accordingly, as the gardeners' friend. If Shakespeare be not the gardeners' friend, depend upon it he is friend to no one else.

On going through his plays, I find that of our English wild flowers Shakespeare mentions about fifteen, alluding to some only once or twice, to others a dozen times. Of exotic flowers, or such as were cultivated in the scanty gardens of his period, more than 300 years ago, he mentions nine or ten. Of trees and shrubs, exotics included, there are notices of about twenty-five. Of fruits, whether ripened in England, or imported from foreign countries, I find the names—sometimes often recurrent—of about thirty. Vegetables are spoken of in about equal proportion. Products of the nature of spices and medicines are mentioned to the extent of about a score; and the same is about the number of what are contemptuously called "weeds." The total is thus

about 150, or very considerably higher—I think considerably more than double that of the total to be found in Milton—and considerably exceeding that of the plants mentioned by the next who is most copious in allusion to plants, the ancient Roman poet in whose *Georgics* and *Æneid* the references are so frequent and diversified. Shakespeare, we must remember, did not set out with a view to talking of trees and plants. His designs were very different, and the allusions are only casual and incidental, a circumstance which renders the total of 150 truly remarkable. In reference to this total we must remember, again, that three centuries ago botany had scarcely found its feet, and that few of our English wild flowers had been discriminated. Shakespeare had no “floras” to consult; it is doubtful if he could have found even a botanical teacher. The only books upon plants then in existence were the writings, in Greek, of Theophrastus and Dioscorides, and, in Latin, of Pliny and Columella, with such “herbals” and “histories” as had been produced in his own age; those, for example, of Fuchsius and Wm. Bulleyn. Shakespeare’s library was Nature; his vocabulary was little more than the vernacular; and glorious is the use he has made of these. It seems to me that we ought to be thankful that he lived in an age when science was not yet fledged; when there were neither Eschscholtzias, nor Odontoglossums. Having only simple plants to deal with, he has shown us how all comes right to a master, that the Cowslip is every bit as good an illustration, and comes charged with as much beauty as the proudest *Lælia*, or any other floral aristocrat that fetches ten guineas a root. G.

THE KITCHEN GARDEN.

CELERY CULTURE ROUND LONDON.

THIS is one of the principal crops grown in the valley of the Thames, both on the west and the east side of London, and in other districts where the soil is good, deep, rich, and moist. In market gardens, this vegetable is grown in bulk much better than we generally find it in private gardens. The crop is universally large, crisp, and solid, and neither care nor labour are spared to bring it to perfection; indeed, this is the only outdoor crop in market gardens that is persistently watered. The Red and White Solid are the only two kinds cultivated; they have sometimes the prefix Manchester added to their names, but that signifies nothing, considering that the Celery known as Manchester is only the Red Solid, or a variety of the same that is scarcely distinguishable from the original. The Celery seeds for the first crop are generally sown in February, broadcast, on a slight hotbed, and thinned out a little after they appear. A large or main sowing is made in March, and another for a late crop in April. All these sowings are commonly made in frames in gentle hotbeds, but Mr. Geo. Steel, of Fulham, sows his main crop on an open-air bed as follows:—About the 20th, or some time in the last week of February, he casts out a trench some 15 or 18 inches deep, 6 feet wide, and any length (say 20 yards), and this he fills firmly with fermenting manure, over which a layer of a few inches deep of common soil is placed. All being levelled and well rolled, the seeds are sown broadcast over the whole surface, and slightly covered by sifting some light soil over them. These beds are then covered with rank litter until the seeds germinate, when the litter is removed in favourable weather during the day, but replaced at night until the weather is sufficiently genial for the plants to stand without any covering whatever. The seedlings, either in frames or in beds, are freely exposed, by uncovering, by day and night in favourable weather, and in the case of frames, by tilting up the sashes when the weather does not permit of their removal. When the seedlings in either case become thick, they are thinned a little, but are not pricked out into other frames, except in the case of very early sowings. When they have attained a fair size, however, they are pricked out (in May) in beds in sheltered positions in the open air, in lines 9 inches apart, and 2 or 3 inches asunder in the rows; or they are pricked out in beds 6 feet wide, with

an 18 inch alley between them, nine lines of Celery in each bed. Here they are allowed to remain until time and convenience permit them to be permanently planted out. A great point observed by all growers is to have the ground to be planted cleared of its crop as soon as possible in autumn or early winter, then heavily manured all over, and trenched and ridged, permitting it to remain in this condition until it is required for Radishes or spring Cauliflowers. Generally the Celery is planted in the alleys between the beds of Radishes, thus leaving the rows 5 feet apart, or between alternate lines of Cauliflower in May and June, in which case the Celery will have taken to the soil and begun to grow before the Cauliflowers are all removed. If this sort of interplanting, however, is practised, provision must be made for such at manuring time by marking off the ground in 5-foot breadths, and giving a quadruple quantity of manure under each line, and into this the Celery is eventually planted, thus saving the labour of re-manuring, which would cause a disturbance as regards the spring crop. If the Celery, however, is planted in an open field after the entire removal of a spring crop of vegetables, the ground is cleared of all refuse, dug over, and marked off; and, if it has not been previously prepared by giving the extra quantity of manure in winter, that must now be applied. For the first crop and the main crop the rows are usually 5 feet apart; for the late main crop $4\frac{1}{2}$ feet, and for the latest or winter crop 4 feet apart. No ridges are formed, as is the case in private gardens; but a furrow is merely drawn, with a hoe, as for sowing Beans or Peas, but a little deeper and wider; and into these furrows the plants are inserted by means of a dibber. When a clean field is lined off and ready for planting out with Celery, it is precisely like a field of seed beds, with the beds all 4 feet wide, and the alleys 1 foot wide and about 6 or 4 inches deep. Market gardeners never plant more than one row of Celery in each line, and the plants are about 8 or 9 inches asunder; the strongest are planted out first, and the remainder form successions. Experience has taught growers for market that deep planting is not advisable, more especially in the case of late crops, because when planted deeply the Celery is apt to suffer from damp at the root, and is consequently liable to rot. They therefore plant in such a way that, when finally earthed up, the roots shall be above the level of the trenches. The space between the rows is planted with Lettuces, French Beans, Cauliflowers, Coleworts, or Endive.

Soon after the plants begin to grow strongly, a little earth is drawn to them with a hoe; but earthing-up, properly so called, is generally performed at three different times. In the first operation, which is done when the plants have made large leaves and gained good strength, the soil is placed about the plants from the intervening space, taking care not to rob any of the plants growing on it; and at the next earthing-up the same precaution is observed. By this time, however, most of the catch-crop vegetables will be removed for market. At the two first earthings-up a hollow is left along by the necks of the plants, so as to conveniently retain a good supply of water. At the third and final earthing-up, the ridge is well closed at the top by pressing in the soil against the plants by means of the back of a wooden rake; a man with a rake going on either side of the ridge, and both pressing at the same time, fill up the furrow effectually. Celery ridges are, however, most liberally watered during the growing season, either in the ordinary way, or by means of hydrants, to which 1-inch metal pipes are attached, or common gutta percha hoses where hydrants do not exist; hogsheads placed at intervals in the fields supply water for the purpose. Where watering is not done by cans, the hose is employed; this mode is reckoned to be eventually as cheap as any. One man carries the end of the hose along the ridges, directing the stream of water, whilst another keeps the hose free from twisting; and if the length be great, a third must be employed to help, and to attend to the turning off and on of the water. Towards the end of August the early produce comes into use, and from that time until February a regular supply is kept up. Before lifting the crop, part of the leaves is switched off with a sickle, then, in lifting, a trench is thrown out at the end of a ridge, which is partially levelled, and the crop is removed at the same time; a set of people being employed in lifting,

another in wheeling or carting to the packing shed, and a third in washing, bunching, and packing. Sometimes a very late crop of Celery is grown for use in soups and other dishes. For this purpose the seeds are sown in June, pricked out as usual, and finally transplanted into rows 2 feet apart. As they never grow much, this distance is sufficient for them, for they are seldom earthed up more than once, and if kept until the warm weather sets in, they will certainly "bolt" and become useless. Slugs, especially in moist weather, are sometimes very destructive to Celery leaves; but their progress is arrested by dredging along the tops of the ridges with air-slaked lime, and operating similarly on the banks or hedge-rows surrounding the field where it is grown. Highly cultivated ground, if inland, is seldom infested by this pest; but where there are neighbouring hedges or banks, these slugs are sure to be found, and, no matter how well tilled the soil may be, their ravages will become apparent unless liming is resorted to.—*Field.*

LONDON MARKET PEAS.

THESE are grown in the immediate neighbourhood of London much more plentifully than Broad Beans; nevertheless, ninety-five per cent. of the Peas that comes to Covent Garden Market in summer and autumn are grown in Bedfordshire, distant parts of Surrey, Kent, Essex, Hertfordshire, West Middlesex, Bucks, Berks, and other neighbouring and distant counties. The favourite sorts are difficult to name, on account of the partiality that different growers have for different kinds; certain it is, however, that the early dwarf kinds are universally the most desired, on account of their quick returns, the small space they occupy compared with tall Marrows, and because they require no stakes. Mr. Myatt, of Deptford, prefers Beck's Little Gem to all others for an early crop, on account of its excellence, great bearing property, dwarf habit, and easy management. He sows it in open quarters or fields in rows 2 feet apart, on a dryish soil, in the end of January, and reaps the produce in June. To succeed Little Gem he grows Alpha (Laxton's), which he sows a fortnight later than the other, and in rows 2½ feet apart, and this Pea he considers better in quality than any other sort which he has grown, and the one for which, in preference to all others, his customers inquire. One year he grew all his Peas for seed purposes, because he found it almost impossible to get people to come "Pea-podding;" therefore he had to devote all his labour strength to more pressing work. He did not lose, however, by this, for he realised a very high price for his spare seeds, as when the kinds are good and true, they always demand a ready and high market price. Many hundreds of acres of ground, too, throughout the above-named counties, and on purely agricultural farms, are devoted to the growing of White Peas for seed; and as this crop is got off the ground in good time—about the 1st of August—the ground is at once ploughed over and sown with White Turnips for Covent Garden, where the tops as well as the roots are disposed of. Other sorts that I have found highly esteemed with market gardeners are Early Frame, Croom's Dwarf, and Bishop's Dwarf. As a rule they are sown for a first crop in January, and invariably on a dryish soil, and in as sheltered a place as possible, other sowings being made fortnightly in succession till April, or even till the 1st of July. The demand for Green Peas, however, ceases after the 1st of September; therefore other crops more profitable might be grown on the space they occupy at that time. In many instances the first sowing of Peas is made in December on a warm border; but, considering that they must thus be sown a little deeper than in January, and the risks to which the seeds are liable from mice, birds, insects, and damp, it is a much-disputed point amongst good growers whether the December sowing has any advantage over that made in January; whilst many contend that the produce of the latter is quite as early as that of the former, and the crop is less subject to risks. In making early sowings, it is a practice with market gardeners to choose a fine day to break down the ridges (the ground being previously manured and trenched), measure off the lines and draw the drills in the forenoon, and to leave them open till the afternoon, so that the soil in them may dry a little, and become thereby warmer; then to sow the seeds and cover all up before the evening. The drills vary from 2 feet to 3½ feet apart, according to the rankness or dwarfness of the sorts grown, and the object which the cultivator has in view. In the close lines, Lettuces or Spinach are used as inter-crops, but in the more distant ones Cauliflower is the crop usually planted. Picking is often resorted to, and the more attention paid to this, the longer will the Peas continue to bear. For seeding purposes the Peas in the rows are shifted once or twice from one side to the other, so as to preserve

the pods from rotting with the damp and from being destroyed by snails, and to cause all to ripen alike and well. When the Green Peas arrive in the market, which they do in half bushel baskets, covered with Rhubarb leaves fixed on the surface by means of Willows, and are disposed of to various salesmen, these employ women to shell them in large quantities. All the Peas then, little and big, are sifted; the largest being thus kept separate and freed from all spotted or worm-eaten seeds, are kept in basins by themselves, and sold at a higher rate than the others, which are in their turn re-sifted and picked, until three kinds of Peas are the result. Covent Garden Market is supplied with Green Peas from Algiers as early as March, and from that source, Spain, and Portugal in April and May, and from France in May and June. It would hardly pay the French growers to send us green Peas during the summer time, when our own market gardens and farms glut the market; therefore, what they do not dispose of at home they preserve in small tins for exportation to England during the succeeding winter, and thus it is we see at that season in the salesmen's shops "green Peas at 1s. per tin." Many people are led to imagine that these are freshly picked Peas, but that is a mistake. F.

OUR POTATO CROPS.

MR. BARNES is correct in stating that the Potato disease generally makes its appearance about the beginning of July. I have noticed that it appears about the 9th of July, and always when we have had "thunderstorms followed by cloudy drizzling rain and fog." A thunderstorm occurred this season on the 29th of June, but it was sharp and short, and left no drizzling rain or fog behind it; on the contrary, it cleared away rapidly, and was succeeded by bright sunshine and a nice drying wind, which dried up all the damp from vegetation, and left it in a healthy and growing state. Therefore, in only a few small ill-ventilated gardens, overshadowed by trees, did disease put in an appearance. At least, I have not yet heard of any material damage having been done by it, and I have examined and paid great attention to the Potato crop in numbers of localities, but luckily without finding any disease. I may say, indeed, that as far as the south-west is concerned, there is none at present. And as we still have brilliant sunshine and drying healthy winds, I think we shall escape. I have always been inclined to think that if we could get safe through July, we could keep free from disease; July is pre-eminently the month in which most of our heaviest thunderstorms occur, a fact which goes far to prove that electricity is the cause of the disease. It has been found by passing a strong electrical current through some portions or branches of Willow cuttings, and then planting them, that the electrified portions withered and died, whilst those portions not acted upon grew strong and healthy. It has been stated, moreover, that even small shocks sent through the stem of a Balsam killed it in a few minutes, although no disruption of its parts was visible. The tissues were, however, doubtless acted upon by a too strong current, in such a way that the sap could no longer continue its course, and hence death was the result. This is not, however, always the case when Potato leaves are struck; on the contrary, they often show disruption too plainly and are thus left in a condition favourable for the attacks of insects or Fungi. I have often tried the effect of cutting off the discoloured spot in order to see if the rest of the Potato would remain good; but no, it always decayed. Be the cause of disease, however, what it may, I am heartily glad that our Potato crops are likely to escape this season. I am now writing at the same table at which I sat last year on the 24th of July, the morning after which we had one of the most terrific thunderstorms with which this county has been visited, and on the 25th I visited the Potato fields in this neighbourhood and found them a mass of disease, although one week before they were luxuriant and healthy. I have observed the Potato disease for these forty years past and have, every season, been more and more convinced that the cause of it is electricity. J. SCOTT.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Cattell's Reliance Cabbage.—We have received specimens of this Cabbage cut from a bed in which heads were fit for use in the end of April. It is one of the best early Cabbages we have seen this season.

Onions Splitting.—Having planted a fine bed of Giant Rocca Onions, sown in August last, they grew strong and healthy. I watered them well and regular, frequently giving them a supply of liquid manure. About the first week in July the largest began to split in the centre, forming two bulbs; and now the whole of them are in the same condition. Previous to splitting they averaged sixteen inches in circumference. I likewise sowed some of the same seed in March last, when the Onions grew very large, but, strange to say, they are now dividing, forming two distinct Onions. Can any of your readers inform me whether this is usual? If not, what is the cause?—*GEO. DAVIES, Haverfordwest.*

NOTES OF THE WEEK.

— MR. PEARSON, of Chilwell, is somewhat jubilant in a contemporary on the sufferings of hardy flowers during the present year, and seems gratified that "the advocates of the mixed border have been silent of late." Considering the unusually miserable aspect presented by bedding plants throughout the London district this year we should have thought it the least likely of all seasons to give rise to remarks of this kind. The fact is, that though hardy plants suffered greatly from winter and spring drought and May frosts, the main beauty of our gardens has been afforded by them. The Yuccas, now so effective in many gardens, the Gladioli, Arundo conspicua, Lilies, Irises, Daffodils, Pæonies, Larkspurs, Anemones, Columbines, Harebells, Hemerocallis, Everlasting Peas, Enocheras, Phloxes, Primroses, Ranunculi, Rudbeckias, the Forget-me-not family, the Globe-flowers, Speedwells, Violets, Tritomas, hardy Crinums, Snowflakes, Grape-hyacinths, not to name a few dozen other charming families of hardy flowers, have afforded us, even in 1874, a feast of beauty compared with which the vast display struggling over the mud-edgings in our London Parks for the last eight weeks is poor indeed. It cannot, moreover, be too often said that the mixed border is but one of many ways in which these and other hardy flowers may be grown.

— WE have received splendid spikes of one or two distinct varieties of *Disa grandiflora* from Sir Wm. Marriott, and grown in his garden at Down House, Dorset. The flowers individually were very large and richly coloured, two or three on a spike, which at a distance looked as if it bore brilliantly coloured Lilies of various hues. The foliage accompanying the spikes also resembled that of vigorously-growing Lilies. This is one of the most striking of all terrestrial Orchids, and rarely seen in anything like perfection.

— LONDON is now, we fear, making preparation for a new danger in the wood and pitch streets now being laid down. At a period when whole cities are laid waste by fire it is, surely, unwise to make the street itself combustible, and, whatever other points a good street paving should possess, non-combustibility should be considered essential. It is frequently supposed that the buildings in Chicago and Boston, burnt by the great fires of the past few years, were built of more combustible materials than ours, but to a very large extent this was not the case. They were often of stone as massive as any in London, and fires of much less intensity would of course, set fire to wood and pitch roadways.

— OUR attention has just been directed to some useful horticultural implements, principally the inventions of Mr. Alfred E. Peirce, of Oxford Street, a well-known exhibitor at most of our leading exhibitions. These consist of tubular iron ladders, which may also be used, if required, as a pair of steps; and some remarkably useful improvements in the way of library, office, and conservatory chairs, which may also be utilised as steps if desired; a new hose-reel, too, deserves general adoption, as, by a simple contrivance it picks up the hose and winds it on the reel or drum at the same time instead of rapidly wearing it out by dragging over the surface of the gravel walks or lawns in the usual way. Mr. Peirce has also introduced the vegetable slicers and Pea-shelling machines, now found so universally useful in America.

— THE large American Aloe at Kew, to which we have already alluded, is now in flower. The flower-stem is nearly 20 feet in height and the candelabra-like branches are produced in a lax tapering cone nearly half that length. The lower branches are about 2 feet in length. Large quantities of nectar, attractive to bees and flies, are secreted by the pale wax-like flowers. The plant is supposed to be nearly a century old, and Mr. Croucher informs us that it is a peculiar variety sometimes known in collections as *A. mexicana*, and one which differs from the common American Aloe, in the length and disposition of its great fleshy armed leaves. A fine pair of ordinary American Aloes is bearing tall spikes just now in the Royal Horticultural Society's conservatory at South Kensington. Of these plants there is a little grove in the great conservatory at Chatsworth where they grow in great luxuriance, and form a characteristic feature in that noble structure.

— THE current number of the *Botanical Magazine* contains coloured plates of *Crinum Moorei*, a stately Amaryllidaceous plant from South Africa which bears great rosy flowers from four to six on a scape; *Brachysema undulatum*, a native of Western Australia, a pretty greenhouse shrub with oblong leaves and deep purple pea-shaped flowers; *Decabelona elegans*, a striking succulent plant from Southern Africa nearly related to *Stapelia*, having branched, spinose, Euphorbia-like stems and large drooping tubular or bell-shaped flowers of a yellowish-green colour densely mottled with reddish-brown; *Kniphofia Rooperi*, a charming addition to this genus (*Tritoma*), and one which has flower heads closely resembling those of *T. Uvaria* with much broader bright green foliage. It is a native of South Africa. *Achillea ageretifolia*, a native of Greece, is a dwarf

tufted Composite with linear serrate glaucous foliage and conspicuous creamy-white flowers measuring about an inch across.

— THE *Tigridias*, brilliant but neglected old flowers, are now in fine bloom in Mr. Ware's nurseries at Tottenham. They should find a welcome place in all gardens with warm sandy soil, as in such they frequently survive the winter.

— MR. JOHN GRIGOR, nurseryman, Forres, has given the handsome sum of £1,000 to the funds of Gray's Hospital, Elgin. The Forres Nurseries, of which Mr. Grigor is proprietor, are almost wholly devoted to forest trees and shrubs.

— MR. JOHN WILLS has just now a magnificent display of *Tuberoses* in his nursery in the Annerley Road. About 150 strong potfuls, bearing from four to six spikes each, are arranged on each side of the central path of a span-roofed forcing-house. The flower-spikes, which vary from 4 to 6 feet in height, form an avenue of white fragrant flowers.

— WE understand that a new journal is to be started, in which the interests of horticulture will be partially represented, after the fashion of some existing journals. It is to bear the happy and comprehensive title of the *Handglass and Hencoop Gazette and Daffodil and Duckling Journal*. We wish the new aspirant a brilliant career.

— WE notice in a contemporary some remarks on *Ixora Fraserii*, which fail to do the plant full justice. It is distinct from *I. Williamsii*, and is most decidedly one of the hardiest of the whole group, bearing splendid trusses of rich orange-scarlet flowers amid stout fresh green foliage. It has a vigorous habit of growth, and was raised by Mr. Fraser, who was also the raiser of *I. Williamsii*.

— MESSRS. RIVERS's orchard-houses at Sawbridgeworth (described by us at length last year), are now in fine condition, and full of interest to all interested in fruit culture and in the raising of new fruits. There are also some fine examples of well and economically-built fruit houses recently erected in those old and well-known nurseries, and all well filled with admirably-grown young Vines and fruit trees of various kinds.

— IT may interest some of our readers to know that the large-berried Liberian Coffee, to which we have previously alluded (see p. 250, Vol. IV.), is now in cultivation at Kew, and Mr. Kennedy, of Covent Garden, has shown us plants of it, growing well in his shop, under glass shades. Mr. W. Bull obtained both seeds and plants of it from Africa, some months ago, and shipped some of his stock to Ceylon, for experimental purposes in that island. It appears to be harder than *C. arabica*, and the berries, which are twice the size of those of *arabica*, are said to be of a better flavour.

— THE last portion of the Meadowbank collection of plants was disposed of on Wednesday, Thursday, Friday, last and realised good prices. The following are some of the most notable: *Cattleya Dowiana*, £5 5s.; *Anthurium Scherzerianum igneum*, £9 19s. 6d.; *A. S. grandiflorum*, £11 11s.; *Odontoglossum Alexandræ niveum*, £6; *O. hystrix superbum*, £6 6s.; *O. radiatum majus*, £7 10s.; *Lælia elegans Turnerii*, £5 15s. 6d.; *L. superbiens*, £9 19s. 6d.; *Epidendrum vitellinum magnificum*, £6 6s.; *Vanda Batemanni gigantea*, £13 13s.; *Angræcum eburneum superbum*, £9 9s.

— THE extent of the culture of early Potatoes in the Channel Islands has been amply shown by the large quantities exported this season. The approximate returns of Potatoes sent from Jersey during the two months ending July 15, represent 22,623 tons, estimated at £215,000. The area of the island is 28,717 acres; and, it would appear, from the above-mentioned figures, that the cultivation of Potatoes alone has realised £27 9s. 8½d. for every acre of ground on it.

— AT the meeting of the Royal Horticultural Society, which was held at South Kensington on Wednesday last, Mr. H. Loder, gardener to H. B. Hennel, Esq., Forest Hill, exhibited one of the most remarkable specimens of *Lilium auratum* we have ever seen. It was growing in an 11-inch pot and consisted of two stems, each about 10 feet high, which, together, bore sixty-five flowers. This plant has been produced by a single bulb, and, if it may be taken as a specimen of what may be done with other Lilies by skilful cultivation, much more striking effects may be expected from this class of plants than have ever yet been realised.

— WE have received from Mr. Knight, of Floors Castle, magnificent blooms of the double pink-flowered Oleander, an old-fashioned plant it is true, but one seldom seen bearing flowers possessing half the beauty of those sent. They were cut from a plant, Mr. Knight informs us, planted out in a heavy soil and grown in a natural Willow-like manner. He has also, however, he admits, on two and three year-old plants, blooms equally fine. It is a suitable plant for cool corridors, in which it succeeds perfectly at Floors. Two fine specimens in Mr. Peacock's collection at Hammessmith are just now in great beauty, and the flowers are valued for cutting.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Preparing Flowers.

WHERE flowers are wanted to last for any length of time, much depends on the manner in which they have been prepared. Take, for example, a stand in which a truss of Pelargonium or a Camellia occupies a prominent position, how provoking it is, after the last finishing touches have been given, and it is being removed to the position it is to occupy, when first one petal begins to drop, then another, and, finally, down comes a little shower, and nothing is left of one's Pelargoniums or Camellias but the stems. This I have seen often occur; but, by careful preparation, it can be easily avoided. The first thing to avoid are flowers which have been grown in a high temperature and where the plants have not been well hardened off before they were cut, and the same remark applies to Ferns, for, if the fronds are cut for use while the plants themselves are growing in the stove, they will shrivel up in about an hour after having been cut. In cutting, the stems of both flowers and Ferns should be severed with a sharp knife and not with scissors, as is generally done. By using a knife no bruising takes place, and the stems are better able to imbibe moisture, so as to keep them fresh. When arranging flowers it is a good plan to have a basin of water close at hand, and before each Fern frond is placed in the position in which it is to remain to dip it into the water, lift it out, and give it a gentle shake. This will apparently remove the water from the leaflets, but a number of globules will remain on them, though not observable to the naked eye, which will tend to keep them fresh. The water should be tepid, *i.e.*, just the chill taken off.

Wiring Flowers.

Many flowers, in order to keep them from falling to pieces, must be wired, an operation by means of which the stems can be bent into any required position. The different kinds of wires for this purpose may be obtained in the Central Avenue, Covent Garden Market. Of these, I use four kinds, viz., two sizes of piercing wire, stubs, and bending wire. The three former are sold in bundles, cut in lengths, and the latter in reels. The piercing wire is that with which the different parts of a flower are sewn together; the stubs are used as artificial stems to flowers such as Camellias, which are cut off short, and the bending wire, is that with which the flowers are bound to the stubs. Such numbers of flowers require to be wired, it would be impossible to enumerate them all, or describe the mode of doing each; I shall, therefore, select a few of those in most common use, and endeavour to clearly describe the process of wiring them. I ought to have added, that a light pair of wire cutters will be necessary to cut off all surplus ends; these may be obtained of any ironmonger, and the smaller and lighter they are the better, and both these and the wire should be kept in a small box in a dry place, so as to prevent them becoming rusty. Let us begin with the Camellia, a flower employed in all descriptions of floral decoration. Suppose a box full of Camellia blooms was sent from some nursery, they would be found to have been cut off without stems, and to make an artificial stalk, as well as to prevent the petals dropping, wiring must be resorted to.



Bouvardia.

Let the bloom be lifted with the right hand, invert it, *i.e.*, turn it face downwards and gently press it as if one were trying to fold the bloom in two; this, however, must be done very gently so as not to bruise the petals, or the flower will be spoilt; it should then be held in that form between the first finger and thumb of the left hand, and a single wire, the strongest of the piercing kind should be run through its centre sufficiently deep to catch all the petals in the line in which it is inserted, but so as not to show in the centre of the flower when turned up. The bloom should then be half-turned round, pressed again in the manner just described, and another wire should be pushed through it, this one being put in so as to cross the other, and so on until four wires have been inserted, as shown in the accompanying illustration; then all the points of the wires should be bent back until they meet, and being taken hold of by the right hand, should be drawn down between the first finger and thumb of the left hand, close to the palm; even after the back of the bloom has come in contact with the hand the wires should still be drawn down a little; but very gently, an operation which presses the petals into their proper places. The wires should next be drawn close together and one of them twisted round the others in order to keep them firm, and form a slight stem, which should be bound to a stub with some reel wire, a little damp Moss being bound in close to the flower so as to help to keep it fresh. The stem may then be cut as short as may be required, and the mounting of the

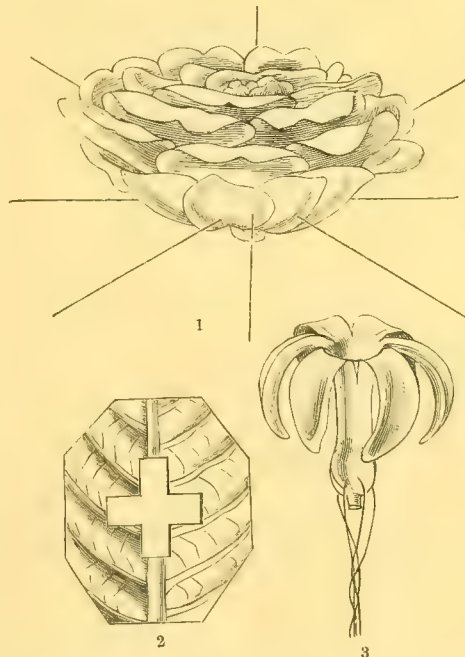
flower is finished. Now let us take a spike of Hyacinth. This, in its natural state, is anything but useful for floral decoration, but if the pips be picked off and properly mounted they will be found to be excellent for many purposes, varying, as they do, so much in colour. Each pip should be pierced by two wires

(crossing each other in the centre) of the finest piercing wire, the pip being held stem upwards between the first finger and thumb of the left hand; the four points of the wire should then be bent backwards and twisted together in the form of a stem. The pips may thus be mounted on a stem singly or six twisted together, and then bound on to each stub. In just the same manner as the Hyacinth, are mounted the pips of Stephanotis. Bouvardias are, however, treated differently. These have long slender white tubes, which, if bruised or cracked in the least, soon turn brown, which of course spoils their beauty. The stem or rather the branch, for several blooms are on each spray of the Bouvardia, should be held in the left hand, and into the centre of each open bloom and down the tube should be run one of the fine piercing-wires; and, as soon as the bottom of the tube is reached, the wire should get a gentle push, so that the point may become inserted in the stem at the base of the tube. A pair of sharp scissors should then be taken and the wire cut off in a line with the centre of the flower. The wire is

never noticed, and it forms a support to the tube and keeps the flower in an upright position. These examples of wiring must suffice, though Orchids, Roses, and many other flowers all require that treatment, into the details of which, individually, it is, however, impossible to enter.

Gumming Flowers.

This is another operation to which attention must be directed, as many flowers not wired require to be gummed,



1. Camellia. 2. Laurel-leaf background. 3. Hyacinth pip.

and some require both gumming and wiring; for instance, the *Bouvardia* amongst others. Common gum will not answer; it must be prepared by one's self or bought, which it can be quite as cheaply as it can be made at home. The gum should be always applied by means of a small paint-brush. First, let us take a *Pelargonium* as an example of one of the flowers which should be gummed. Gum the point of the paint-brush, and into the centre of each bloom should be dropped one drop of gum, which should be dropped so as to fall into the very centre of the blossom. Each truss, as soon as gummed, should be laid on one side before being placed in water so as to dry a little; for the gum, being made of spirits, quickly evaporates. Primulas and several other flowers are gummed in this manner. I shall, therefore, leave my readers to pick out such flowers as should be gummed in this style and advert to such as require to be done in quite a different way. The *Bouvardia* and *Azalea* both, in place of having the gum dropped into the centre of the flower, like *Pelargoniums*, should be gummed outside, the gum being painted on with the brush where the flowers and stem join. To gum flowers neatly and well takes some little time and trouble, but there are several flowers which, if not prepared in this manner, would be otherwise almost useless; for, as soon as arranged, their petals would begin to drop. As with flowers which require to be wired, the selection of those that require to be gummed must be left to one's own discretion.

Keeping Prepared Flowers Fresh.

The best way of keeping flowers fresh after they have been prepared is to place their stems in water, and then to put away the vessels containing them in some dark cool cellar until required for use. Ferns should be kept laying in a pail of water, or else be well saturated in water and then shut up in an air-tight tin canister. In the latter way they will keep for days as fresh as if only just cut off the parent plant.

A. HASSARD.

THE INDOOR GARDEN.

THE GESNERA-FLOWERED SAGE.

(*Salvia gesneriflora*.)

In the last number of *THE GARDEN* (p. 100) there appears a note respecting this *Salvia*, which, when well grown, is truly a splendid plant for the conservatory, and one in the culture of which I have been most successful. My plan has been to grow fresh plants every year, and to throw the old ones away, after sufficient cuttings have been taken and the blooming over. The cuttings are taken in March or early in April, according to circumstances. Each cutting is placed separately in a large thumb pot, plunged in a slight bottom-heat, and, when necessary, they are shaded from the sun. After they are fairly rooted, they are stopped back to two pairs of leaves, which causes them to put forth four shoots, and thus to form a good foundation for the future plant. After these shoots are fairly started, I shift the plants into 48-sized pots; then, after they have made a little growth, I stop again, as before. They should have plenty of water, and should be kept until about the middle of May in a genial growing temperature, but not too high, as that would induce weak growth. About this time I remove them to a frame for a month to gradually harden them, but I still keep them steadily progressing in growth until about the middle of June, when they are planted in the open ground in a sunny position, but sheltered from boisterous winds, from which they are liable to suffer. The ground should be well enriched with good rotten manure. If very large plants are wanted, plant them out 4 feet apart every way; and, if they are properly attended to, they will more than touch each other by the time they should be taken up in autumn. After having been planted out some little time they should receive another general stopping; but, after that, only a shoot here and there should be stopped, so as to make the plants symmetrical in form. After that they should be left alone with the exception of attending to them with water should the season prove dry. Each main shoot should be carefully secured to a stake, for they are very apt to break off at the point of juncture with the

main stem, when the plants become badly disfigured. The stakes should be placed so that when the plants are lifted for potting they may be moved with them undisturbed. As this, like other *Salvias*, is liable to be injured by early autumnal frosts, care must be taken to lift all plants of it sufficiently early to escape them. They should be taken up with large balls of earth and potted into large pots, using for that purpose good rich soil. After they are potted they should be thoroughly watered and then placed in a pit or cool greenhouse, and kept close for about ten days or so, giving them plenty of water, with a syringing overhead every day, until they have made fresh roots, which, if thus treated, they will quickly do. During the winter months they should be kept in a light airy greenhouse, and, thus treated, they will produce flowers on every shoot in March and April, without any forcing, making splendid objects for the conservatory; they are also very useful for cutting, though I find that the flowers are not favourites in Covent Garden. By the mode of culture just described plants may be grown as large as good-sized Currant bushes; to anyone who has never grown this *Salvia* in this way, I can only say try it, and I have no hesitation in asserting that whoever does so will be amply gratified with the result. Anyone having young plants of it may even now plant them out, and by careful tending they will make nice bushes before the autumnal frosts set in, the growth being very rapid during August and September.

Willow Lodge, Mitcham.

H. A. WOOD.

CULTIVATION OF THE CHINESE PRIMROSE.

The cultivation of this Primrose is gradually becoming better understood, as is demonstrated by the higher character of the plants staged at public exhibitions. There, however, yet appears to be plenty of room for further improvement. It is not needful to speak of the value of these flowers for the decoration of the conservatory; but I would observe, in passing, that they are quite unsurpassed for that purpose; and, further, that no other class of plants producing as good a display of colour can be grown with so little trouble and expense. I am now referring to the single varieties, which possess the important advantages, over and above the double forms, of being readily raised to an unlimited extent from seed, and of possessing a more vigorous growth. The double varieties are extremely beautiful, I am perfectly willing to admit, and well worthy of the attention of those who possess the requisite skill, and are able to afford the proper accommodation for their successful cultivation; but, for the great body of gardeners, they are of but little practical value. Their increase by cuttings is a slow and tedious affair, they are rather "miffy," and seldom last in good condition more than two years; and, when all is said and done, they are not a whit more effective in the conservatory than the single forms.

Seed, and Time for Sowing it.

One of the most important matters is to obtain thoroughly good seed, or, to speak more plainly, seed saved from a thoroughly good strain. The selection of the colour of the varieties to be grown may be left to individual taste, so long as the seed has been saved from flowers large in size, of good form, stout in substance, and rich in colour; or, in the case of the white flowers, quite pure. For general decoration the ordinary crimson and white varieties are the most suitable. We grow here crimson and white varieties representing two strains I have for many years endeavoured to maintain in the highest perfection, as well as the Marquis of Lorne and Princess Louise, crimson and white strains, introduced into cultivation two or three years since. The two strains known under these distinctive names are wonderfully good, and seed obtained from true stocks may be sown with the full assurance that a large percentage of the seedlings will have flowers of the finest quality. To maintain a continuous supply of flowers from early in the autumn until late in the spring, it will be necessary to make two sowings, for the plants coming into bloom first will not continue in good condition throughout the season. The most suitable periods for sowing are the early part of June and the beginning of August; the first for the production of plants which will commence to bloom in the first week of November and onwards, and the second a stock that will begin to show their flowers in January or February. Sow in pans or pots of a convenient size, which have been previously prepared by placing a good layer of crocks in the bottom, and filling with a light and rather rich mixture. The soil must be made quite fine to admit of the seedlings being readily pricked off. The surface should be perfectly level, so that all the seed be buried precisely the same depth, and the soil should be

used in a nice moist condition to render heavy waterings unnecessary; for the seed must have a thin covering only, and if this is disturbed in watering, as will be the case if at all heavy, a portion will be laid bare and probably perish. Let the seed be sown thinly, for the purpose of avoiding the necessity for pricking off the young plants before they have acquired sufficient strength to admit of their being handled without difficulty. Cover lightly, and after a light sprinkle of water place the seed pots in a closed frame fixed in a pit, in much the same manner as advised for *Cinerarias*. The seed will germinate more readily if the temperature is rather in excess of that required for *Cinerarias*, and, to afford it every assistance in that respect, keep the pit-lights closed, and only cover them immediately over the frame in which the seed pots are put. The seed germinates readily in a temperature of 60° or 65°, and there will be no difficulty at this season of the year in providing a temperature sufficiently high.

Treatment of Seedlings.

As the seedlings begin to make their appearance above the surface commence to admit a little air. First tilt the cover of the frame, and in a day or two afterwards ventilate the pit also, and employ less shading. When of a convenient size for handling, prepare a sufficient number of ordinary seed-pans, place an inch layer of crocks in the bottom, and fill rather firmly with the compost that will be hereafter recommended. Make the surface level, and prick out the seedlings an inch or so apart each way. Return them to the pot in which the seed was raised, keep rather close and shaded for the first week or so, and then increase the ventilation. In a fortnight they will have become sufficiently established to admit of their removal with advantage to a cold frame, which will be found the most suitable quarters for the plants until the autumn. When strong and well-established, pot them separately in 3-inch pots, and again keep close for a week or so, to prevent their receiving a material check from the removal. From these they must be shifted into 5-inch pots as soon as they are well-established, but before they become pot-bound; and when these are well filled with roots, transfer to the pots in which they are to bloom. A portion of the stock, if required in bloom as early as possible, may remain in the 5-inch pots, and the others should be shifted into 6 or 8-inch pots, according to the purpose for which they may be required. For the conservatory 6-inch pots will be sufficient, but for exhibition specimens the larger size will be the most suitable, as small plants are of but little use on the exhibition table. I am here speaking generally, but, to avoid any misunderstanding upon this point, I would observe that for the early autumn exhibitions they must not be put in pots exceeding 6 inches in diameter; those shifted into a larger size should have the first flower-truss nipped out to promote the production of a side growth and larger heads of flowers. When this is done the season of flowering is delayed by a period of five or six weeks. Indeed, excepting for the spring exhibitions, 8-inch pots are not required.

Compost and Potting.

A prime necessity in *Primula* culture is a moderately open and comparatively rich compost. In practice I have found nothing better than a mixture of three parts mellow loam, full of fibrous matter, and one part of leaf-mould and thoroughly-decayed cow-manure in equal proportions. The loam will require breaking up moderately, and after the loam and leaf-mould have been well incorporated with it, add a liberal proportion of silver-sand—just sufficient, in fact, to make the compost feel gritty. A very fine compost is not desirable, neither is one too rough; but, to a certain extent, the larger the size of the pot the rougher may the compost be used. It will not be needful to dwell upon the manner in which the plants should be shifted from one pot to another, but it may be useful to many amateurs to know that the soil must be pressed moderately firm without being made hard. The pots must be perfectly clean and the drainage perfect. The latter is of great importance to facilitate the escape of superfluous moisture, and thus prevent the possibility of any injury arising from sourness of the soil through the superfluous water not being able to escape so quickly as could be desired. The pots must also be placed on a bed of rather rough coal-ashes when in the cold frame, for the double purpose of preventing the worms entering the pots and enabling the water to soak away readily.

General management.

Air-giving, shading, and watering constitute the principal points in the general management of the stock. Abundant ventilation until the end of September is of the utmost importance; afterwards, sufficient air to ensure a fresh and healthy atmosphere will be needful. If they are kept in close frames for any length of time, the leaf-stalks will lengthen at a tremendous rate, and by-and-bye the flowers will be embedded in the foliage, and partly out of sight, instead of being borne well above it in bold well-developed trusses. The frames

should be ventilated night and day, until the nights become cold and frosty. During the months of June, July, and August, the plants will require to be screened from the sun; and, as a rule, it will suffice to lay a mat over the lights during the middle of the day, when the sun is shining brightly. With reference to watering, it will suffice to say that rather liberal supplies will be required until the end of September, and after that period more moderately. As the plants continue to grow freely throughout the winter when managed properly, they must have sufficient water to maintain that growth; but over-watering must be specially guarded against. The largest measure of success will be ensured by maintaining the soil in a moderately moist condition; and in watering, whether in winter or summer, applying sufficient to thoroughly moisten the ball. As with the *Calceolarias* and *Cinerarias*, I would strongly advise the inexperienced to avoid the use of stimulants. They are quite unnecessary, and may prove extremely hurtful; and it may be safely assumed that soft water alone will suffice for the requirements of the plants. A cold frame has been already suggested as being most suitable for the summer quarters of the stock; and it now remains to be said that, for the winter quarters, a light airy house will be in every way suitable. The temperature most conducive to a healthy growth, when the plants are in the house, is one ranging between 45° and 50°. Those in bloom will do well in the ordinary temperature of the conservatory; but the stock raised from the last sowing will require sufficient warmth to maintain a steady growth, and that will be afforded them by the temperature I have here suggested. The practice of keeping the plants a second year is objectionable; for they very frequently, towards the autumn, decay at the base and perish, and consequently disappoint the cultivator. Even if they remain in comparatively good health, they do not present the fresh and vigorous condition of yearlings. [The preceding remarks, taken from the *Gardeners' Magazine*, represent the experience of Mr. James, of Isleworth, an excellent cultivator of Chinese *Primulas*.—ED.]

THE LIBRARY.

A PLEA FOR PEASANT PROPRIETORS.*

THIS work is devoted to a consideration of the advantages which are thought to belong to small holdings, both in this and other countries; and holders of small pieces of land in Belgium and in the Channel Islands are brought forth as examples for our imitation in this way. Into the merits of small *versus* large farms it is not our province to enter. Mr. Thornton maintains that small holdings are the most productive. Such holdings, doubtless, tend to encourage industry, and it is on that account quite as much as on account of their produce that allotments are of so much value to our farm labourers. In order to accumulate evidence to this effect, he says, "It is only necessary to turn to any country in which the peasantry cultivate their own lands. Such is the case in Zurich, as well as in several other Swiss Cantons; and, accordingly, says Inglis, 'Anywhere in the neighbourhood of Zurich, in looking to the right or the left, one is struck with the extraordinary industry of the inhabitants. In the industry they show in the cultivation of the land, I may safely say they are unrivalled. When I used to open my casement between four or five in the morning to look out upon the lake and the distant Alps, I saw the labourer in the fields; and when I returned from an evening walk, long after sunset, as late perhaps as half-past eight, there was the labourer mowing his Grass or tying up his Vines. But there are other and better evidences of the industry of the Zurichers than merely seeing them late and early at work. It is impossible to look at a field, a garden, a hedge, scarcely even a tree, a flower, or a vegetable, without perceiving proofs of the extreme care and industry that are bestowed upon the cultivation of the soil. If, for example, a path leads through or by the side of a field of grain, the Corn is not, as in England, permitted to hang over the path, exposed to be pulled or trodden down by every passer-by; it is everywhere bounded by a fence; stakes are placed at intervals of about a yard, and about 2 and 4 feet from the ground boughs of trees are passed longitudinally along. If you look into a field towards evening where there are large beds of Cauliflower or Cabbage, you will find that every single plant has been watered. In the gardens, which around Zurich are extremely large, the most punctilious care is evinced in every production that grows. The vegetables are planted with seemingly mathematical accuracy; not a single weed is to be seen, nor a single stone. Plants are not earthed up as with us, but are placed in small hollows, into each of which a little manure is put, and each plant is watered daily.'"

* 'A Plea for Peasant Proprietors.' By W. T. Thornton, C.B.; Macmillan & Co., London 1874.

THE FLOWER GARDEN.

WILD FLOWERS AROUND ARUNDEL.

THOSE who have never studied England's wild flowers will probably be astonished to be told that the Stock, the Carnation, the crimson Peony, the Columbine, and the Poets' Narcissus, are, every one of them, with a hundred others, "Ancient Britons," though, owing to the slaughter made by the plough and other instruments of civilisation, they no longer occur in a wild state. The fact is that a hundred, at the very least, of our beloved and cherished garden flowers are indigenous to the woods and meadows of our own island; so that the distinction sometimes drawn between garden flowers and wild flowers is sheer nonsense; the only allowable one is, between exotics and native or indigenous plants. I have also heard it objected to "wild flowers," that they wither so soon when compared with garden ones. Does the Lily of the Valley, which is English, wither any sooner than the Geranium of the Cape of Good Hope? The comparison is most unjust. Taken score for score, just as they come to hand, I am sure the flowers indigenous to England endure as long as the flowers of any other country. Those brought from foreign lands have generally been selected ones, and were we to select English ones, I am confident we should never lose by the comparison. I find bouquets of wild flowers keep, on the average, quite as well as bouquets of garden flowers, that is to say garden flowers of purely exotic origin; and were the matter pushed to a crucial trial I am almost persuaded that English flowers would win. That many English wild flowers are insignificant, is quite true; so are many of the flowers of any other country. Those which are brought to us for the decoration of our gardens are, as just now said, the selected ones of their several homes; were the flora of the very richest spot transported hither faithfully—a specimen of every species—depend upon it we should find quite as large a proportion, which, after the novelty had passed away, we should care no longer to propagate or keep. When, accordingly, I say that a man who loves his garden for the sake of the plants that are in it, and not merely for its *coup d'œil*, which is a very ignoble love; is delighted, at the same time, with the sight of the wild flowers of the fields and woods, I refer to that section of them which an emissary from the Antipodes—supposing that England were a sort of "South Sea Islands" to him—would collect for remission to his employers. Just suppose, for a moment, that the perfection of civilisation lay in this current 1874, as the growth of a dozen centuries, not in Great Britain, but in New Zealand! What pleasure a collector from the "Royal Horticultural" of the place, or from the Veitchs, or the Rollissons, would take in our Water Lilies, our scarlet Poppies, our yellow wood Nettle, our blue Campanulas. To him these would be as great a rapture as the New Zealand plants were to Englishmen when first brought over; and it seems to me that every Englishman should, in these intelligent days, find them no less a rapture to himself. In the neighbourhood of Arundel there is, apparently, as large a scope for the observation of the best description of English wild flowers as can exist in any part of the three kingdoms. It is peculiarly fortunate in the possession, at once, of high downs, which in many parts are covered with trees; extensive chalk quarries, some of which are worked no longer, and where Nature reigns triumphant; a tidal river, on the banks of which sub-maritime plants grow freely and happily; and numerous little water-courses, which, from some cause or other, seem the home of all sorts of curious aquatics. Add to these the sea-shore, distant only some four or five miles, and it will easily be understood that, in diversity of habitat, it is scarcely possible for any place in England to excel Arundel. Beginning with the downs, here we have that beautiful plant the Musk Thistle, *Carduus nutans*, a fit ornament for the rough or rockery portion of any large garden. In my own garden I have it at present in full flower, the noble crimson heads $2\frac{1}{2}$ inches across, and, as implied in the technical name, in the evening scented like musk. The presence of this particular perfume in plants and flowers is very remarkable, seeing that,

in its intensity, the odour is one associated with a little animal, though it is not without some curious parallels; the Hound's-tongue evolving the scent of mice, while Herb Robert smells like foxes, and the Coriander plant like the most abominable of household vermin. Here too, on the downs grows the Sweet Briar, the round cups of the most exquisite pink; while the turf is in many parts quite lilac with the delicate bloom of the little Quinsey-weed, *Asperula cynanchica*, the colour so like that of the official Valerian, that one might fancy each laid on while the palette was wet for the other. I make no mention of the unspeakable effect of the Wild Thyme, nor of the innumerable Golden Cistus, for these, though good, are among the "common things;" we find them at all events, in a hundred places where the former do not occur. Here and there may be gathered the Bee Orchis and Fly Orchis. How pleasant it is to see that old England is never behindhand, when, excepting the Palms and one or two others, a natural order of any magnitude wants illustrating in the completest manner. Trinidad may boast of its Papilio, and Brazil of its Frog Orchis, but, as long as we have our English Ophrydes, we may venture to compete in oddities with all the world. Another very lovely Orchis, not uncommon at Arundel, is the crimson *Pyramidalis*; while, in the woods, where it is damp and shady, they have the Twayblade, and occasionally, under Beech trees, the *Nidus avis*. The Twayblade was the first Orchis that I learned, when, as a lad of thirteen, I started on the botanical pilgrimage that every day since that time has become more delightful and rewarding. Hence I look upon it still as one of the little blessings of my life; for, depend upon it, though money is useful, and learning brings reputation, the things that a man has most reason to be thankful for, are the unconsidered ones that, in his boyhood became key-notes to the inmost pleasures of his existence, providing him with pastime when everything else became a weariness and a trial. To have a secret source of pleasure that we can fall back upon under every circumstance and in all conditions, that comes fresh and fresh to the heart every year, and that daily becomes more solid and substantial, is assuredly no slight privilege. Every man may command such a one, if he will only begin early enough; and I believe that none will prove more true of its kind than botany. Shall I ever forget my Twayblade when transplanted from its native woodland into my garden, the buds only half-expanded, morning after morning I lay down upon the turf to count the increase, and watch the progress, every quaint little flower, a fairy's head above, two long green legs below, seeming to say to me, *i.e.*, if I properly understood its language, "Love me, and I will love you." Shall I ever forget, either, how, in due time (slowly, slowly, but patiently waited for), at last came on my Twayblade those beautiful little green spheres, the seed-pods, totally unlike anything else I had ever seen, bursting in beautiful meridians like those on my globe in the school-room. Forgive me, gentle reader, if I am tiresome. Ask yourself what sweet thing, when you were yourself a child, made a little heaven to your imagination, and has never died away from your private memory, but lives there still, like a first love, and you will understand what the Twayblade is to my own. In one of the woods where these plants occur, I noted, for the first time in my experience, the Polypody growing upon the boughs of an aged Elm tree. That this beautiful Fern, the *Chrysophylla* of old England (for how golden are its abounding spangles), perches itself very commonly upon old Oak trees, is known to everyone who in the woods lifts up his eyes. It may grow quite as freely upon other trees; I do not know how this may be, and merely record the fact of its abode upon the Elm as new to my own observing. Anyhow, what a capital idea it gives one of a *bonâ fide* epiphyte! Mosses and Lichens are too small; the Mistletoe is a parasite; Ivy is neither one nor the other, having its roots in the ground; the Polypody, in its way, is perfect as an illustration. Mistletoe, I may remark, occurs upon the Limes at Parham, a place so rich in ancient and noble trees, especially Oaks, that an artist may study some new and glorious form every hour for the space of a week. Everywhere about Arundel, the trees are glorious. In the Park there are Maples, very many larger and more beautiful than I have ever seen elsewhere. Here too, is a Hazel, the common *Corylus Avellana*, with a trunk that might

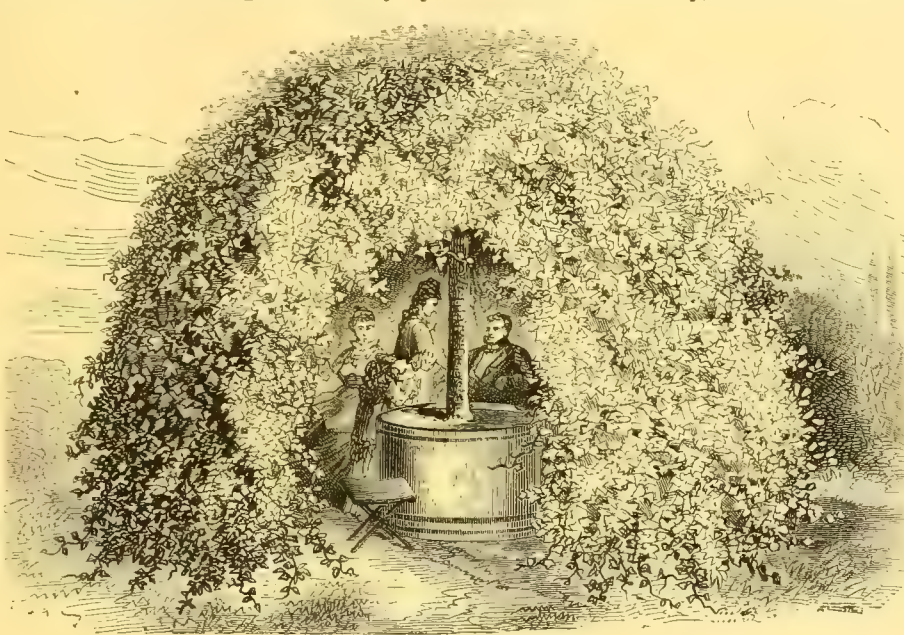
be sawn into planks, and a Cherry so big that it seems a remnant of the heroic ages. Most remarkable of all perhaps is a Spanish Chestnut at Friar's Lee, the massive trunk of which presents the appearance of having been spirally twisted by the hands of a Titan. From base to summit the stem of this wonderful Chestnut is wreathed round and round, in the most beautiful manner, with deep spiral fissures and corresponding elevations, that remind one of the apprentice's pillar in Roslyn Chapel, the pattern a dozen times repeated.

In the chalk quarries near Arundel, especially those about Burpham, grow many distinguished plants. Among the most noticeable are the narrow-leaved Willow-herb, so great a favourite in suburban gardens, the sky-blue Echium, the Lady's fingers (*Anthyllis Vulneraria*), the little palmate bracts of which, one to every head of flowers, suggest the idea of an open hand; the sweet Melilot, which when dry, smells like new-made hay; that grand Centaurea, which, from its likeness to another handsome plant, goes shares with it in the appellation *Scabiosa*; the great white Galium Mollugo, the golden Oat-grass (*Trisetum flavescens*), and, over again, the Orchis pyramidalis. Less conspicuous but very charming wild flowers inhabit the same place in profusion; while, in the neighbouring hedges are the Bryony, the Tamus, the Woodbine, Privet—so fine and luxuriant, that one is tempted to call it the English *Syringa Emodi*; and, above all, the loveliest Roses that ever grew. It is in the immediate neighbourhood of the Burpham Quarries that many of the best aquatics are to be gathered, the little water-courses that intersect the meadows teeming with the rosy umbels of the Butomus; while here and there are patches of the Water Arrow-leaf (*Sagittaria sagittifolia*); and, as to the more usual plants, there is everything you like to ask for—from *Ceanothe fistulosa* and Frogbit down to Reeds. Abundance of water-plants may be found also in Swanbourne Lake, the ornamental water at the lower extremity of the park. Here flourish the Water Lilies, sundry Potamogetons, the *Ranunculus circinatus*, and the *Myriophyllum*; while, on the margins, mingled with various cosmopolites, grows the *Cladium mariscus*. In the lanes, in various directions, especially towards Amberley, a beautiful spectacle is presented by the *Lathyrus sylvestris*—the original form, so it would seem, of the Everlasting Pea of the gardens. Here, too, I note the curious anomaly of *Carduus palustris* towering high among the bloom of the Brambles. As for such plants—never to be beaten—as the Hart's Tongue, the Meadow-sweet, and the Poets' Forget-me-not, they attain a degree of luxuriance at Arundel quite astonishing. But I must not presume farther on your space. To exhaust my list, I should have to enumerate something like the half of our British flora, and certainly the half that is worthiest for sweetness and beauty. I have said nothing, for instance, about the Mouse-ear Hawkweed, that smells like Raspberry jam; nor about the Silver Plantain, nor about the Teasel, the *Nepenthes* of our native plants, just as the Pellitory, here quite as plentiful, is our English "artillery plant." The Foxglove also is here, and the Plough-

man's Spikenard, and the lovely lilac *Knautia*, that turns green in the smoke of a cigar; the St. John's Wort, too, that is so like the Golden-rod, and the Loose-strife, and the Bugloss, with companions in the *Chlora* and the *Erythraea*, so clear in their delicate hues, and so sensitive, withal, to the sunbeam—opening when it shines, shutting up when it departs. At the time of my visit the Furze was brown; but truly splendid, in its season, must have been the display. Of Bluebells and Primroses, also, there were but vestiges—enough, however, to show that Arundel is the same in spring as in high summer. I do not wish to assume that Arundel beats all other places in regard to its wild flowers. Possibly other parts of the sunny south are quite as rich. I seek merely to indicate how wealthy it is in the simple and everlasting charms of Nature—the too often unconsidered elements that have made our country a fitting home for refined taste. The scenery is on a par, and there live at Arundel those who are worthy of it. G.

A MOVEABLE IVY BOWER.

THE accompanying is an illustration of a moveable tent, or sun-shade, formed of Ivy, which was exhibited at the Paris Exhi-



A moveable Ivy Bower.

bition of 1867, and the plant of which it is formed has now a straight, clean stem more than 6 feet in height. The spread of the branches, if fully extended, would be about 10 metres (between 32 and 33 feet), but they are trained in an arching manner so as to leave an opening about 7 metres (about 23 feet) in diameter. The branches are well furnished with leaves, and, as the plant is grown in a tub, it can be removed from place to place, as may be required, and may be made to serve as a most agree-

able summer-house. The facility of transport is still further increased by the fact that the branches are trained over wires which can be folded up umbrella-fashion. The plant is now in the possession of M. Roussel, landscape gardener, 16, Chaussée du Maine, Paris, but we are not informed to whose patient skill we are indebted for the work of training it in its present fashion. Many similar tents might be made with other kinds of plants, such as Virginian Creeper, Common Kidney Bean, Hops, and other plants that grow much quicker than Ivy, but in that case instead of a central stem, the pots containing them would have to be set on the outside of the circle and the plants trained over a canopy formed of wire or woodwork.—*Revue Horticole*.

Nertera depressa.—Mr. Barron grows this pretty little plant at Chiswick, planted on the surface of a shallow pan, like *Selaginella*, filled with fibrous peat, turfy loam, and leaf-mould. At a recent meeting, two pans of it were exhibited, reminding one of pans of *Selaginella*, or of Stone-crop strewn with coral beads. The plant has a very wide geographical distribution, being found at elevated altitudes in the Falkland Isles, Cape Horn, on the mountains of New Zealand, and in Tasmania, as well as in the Campbell Islands, and other places in both hemispheres. It is quite hardy in sheltered positions on rock-work, and grows freely during the summer months.

To see it to advantage, however, it should be grown in a cool moist house or pit, and liberally supplied with water at the root. It is seldom seen in cultivation, although it is extremely interesting even when treated as a window plant in a north or north-western aspect. It also grows well in a Wardian case, in which it runs over the surface of the compost like bright green Moss. It is rare to see it in nurseries, although it has been in the country for many years.—B.

NOTES FROM THE LEVANT.

(Concluded from p. 94.)

IN returning from Macri to Smyrna, overland, a distance of about 250 miles on horseback, I passed through, what I believe, is some of the most beautiful country in Asia Minor, varied with wood, water, mountains and plains, in such a way that it reminded me of places in Scotland. I was, however, so pressed for time, that I could not stop much to collect plants, though I took a few of the best of those I saw by the roadside. Among them were no less than three species of *Fritillaria*, namely, *F. Pinardi*, *F. Græca*, and one which I think is *F. acmopetata* (Boiss). The two former are very dwarf species, with yellow flowers, spotted and blotched with purple; the latter was a much taller one with large dark coloured bells.* I noticed that of these *Fritillarias*, not more than a small proportion of roots flower, the rest producing only ovate radical leaves like those of a seedling. These bulbs, though often stronger and larger than those that had produced a flowering stem, were small compared to the bulbs of cultivated *Fritillarias*; and often very deep in the ground, among stones and roots. Near the spot where Sir Harry Jones was shot by brigands some years ago, I found a pretty Tulip in flower, *Tulipa undulatifolia* (?), but I was still too early for some of the best plants. In the high plains round Moolah, a very striking yellow-flowered plant, *Leontice leontopetalum*, was coming up in abundance in the fields. This is a plant worth looking after by gardeners, as it would be perfectly hardy in England, and from its size and time of flowering, a fit companion in the herbaceous border for *Dielytra spectabilis*. *Paronychia argentea*, a beautiful silvery trailing plant, grew abundantly in some of the rocky Pine woods. I also got several more Orchids, among them, *Serapias longipetala* and *lingua*, *Orchis undulatifolia* and *longicorne*. On arriving at Smyrna after an unusually quick journey, I found my plants, though a good deal scorched by the hot sun and shaken by the constant jolting of the horses, were still mostly alive, and having sent off some boxes of them to different friends, I determined to spend the next week in a trip to the Bozdagh, a range of mountains which run from Cassabar as far as Alashehr, and reach at least 6,000 feet of elevation.

The market gardens at Smyrna were now at their best, and produced abundant crops of excellent Lettuces Onions, Beans, and Artichokes; Peas are not much grown, as the climate is too dry, neither did I see Currants, Gooseberries, or Strawberries, except in a few private gardens at Bournabat. The gardens at Bournabat are somewhat celebrated in the Levant, but though they contain many fine trees and shrubs, I was disappointed both with their contents and arrangement. Loquats, Oranges, *Cratægus glabra*, *Pittosporum*, Pepper trees, Cypress, Judas trees, Myrtle, *Euonymus*, and a large-leaved species of Box, are their principal ornaments in the way of trees; but the flowers were a poor show, considering what they might be in such a climate. *Eucalyptus globulus* has been planted freely here within the last six years, and grows rapidly, but the Cypress is certainly the finest tree anywhere round Smyrna. Bedding out is practised to a certain extent in the English gardens, but no use at all has been made of the numerous indigenous plants which would be thought so much of in England. I was assured that Hyacinths would hardly grow at Smyrna, which I thought strange, considering that they are indigenous; but gardeners in the Levant have still much to learn with regard to the cultivation of flowers. On my way up to Cassabar I stopped at Manisa, and ascended the mountain at the back of that town, which is between 4,000 and 5,000 feet high. Here, many trees and plants which I had not seen in Lycia were common, especially

* I see this is placed as a var. of *F. Lycia*, by Mr. Baker in his recently published paper on *Fritillarias*, but the plants are very distinct in appearance.

Pæonies, *Hollyhocks*, *Aubretia*, *Alyssum*, and other well-known garden plants. I found a species of yellow *Crocus*, with corm of the biflorus type, in great abundance at about 4,000 feet, together with *Scilla bifolia*, a hairy-leaved species of *Gagea* or *Ornithogalum*, and a curious looking vernal *Colchicum*, *C. Steveni*. Apples, Apricots, Peaches, Cherries, and Vines, are cultivated largely to an elevation of at least 2,500 feet, and were, at this time, covered with blossom. The Turks and Greeks have an immense number of different varieties of fruits, many of which would be well worth growing in England. Apples were now, at the end of April, cheap and excellent, and I was assured that some of them would keep good until the new crop was ripe. The dryness of the climate no doubt has a good deal to do with this, but we have still much to learn from the Orientals with regard to fruit. The soil of this mountain, as in the Bozdagh, was quite different from that of Lycia, for though the red loam appeared at the top, the sides and slopes were composed of a light schistose crumbly soil, which sucks up water like a sponge. On arriving at Cassabar I inquired for the celebrated Cassabar Melons, and was told that they are not grown in gardens but in the fields round the town, as an ordinary crop. I rode out to see the kind of soil on which they grow, and which I think must have a good deal to do with their superior excellence, as at Smyrna, only forty miles off, they do not acquire the flavour that they have at Cassabar. It is a good strong schistaceous loam, of a very light colour, and of great depth, on which Cotton and Tobacco succeed well. The Melon seed is sown in nurseries, and the plants put out in the sides of trenches in the early part of May. They are frequently irrigated in the earlier stages of their growth, and, under a burning sun, grow very rapidly. They begin to ripen in July and August, when they are exported in large quantities to Constantinople, Smyrna, and other places. This variety, the Cassabar summer Melon, must be eaten fresh; but there is another sort, the fruit of which, if cut in the autumn and hung by the stalk in a cool dry place, will keep six months or more. I have eaten them myself at the end of April, and though the flavour is not equal to that of the summer Melons, the flesh was sweet, juicy, and excellent, and the rind extremely thin. There is a third variety, a Water Melon, grown here, which is like other Water Melons, a very pleasant fruit in hot countries, but hardly worth trying in England. I have brought seed of these Melons to England, which I should be glad to send to anyone who might wish to grow them; and I have also a sample of the soil, by imitating which, I think, a considerable degree of success might be obtained. The Cassabar Summer Melon is certainly finer in flavour than any variety known in England, and would be worth a little trouble to mature well. There is an idea among the inhabitants of Cassabar that their Melons have deteriorated of late years, owing to the want of care in selecting the seed, for, whereas, formerly they were all consumed in the neighbourhood, they are now mostly sent away by rail to Smyrna, and from there by sea to Constantinople. From Cassabar I went up the plain as far as Salikly, and then turned off into the mountains, intending to visit a lake I had heard of at a considerable elevation, called the Sijekgul. It is certainly one of the most charming rides in the neighbourhood of Smyrna; and, when the line is open to Sart, will be within twelve or fifteen hours' journey of that place. A mile or two from the village of Salikly the road enters the outer spurs of the Bozdagh, which are formed of a hard whitish or red gravel, and, being worn away by the rain into sharp ridges or pinnacles, give the country a very irregular and broken appearance. For the most part these are covered with very stunted Pines and scrub; but, the soil is so arid and stony, that hardly any new or interesting plants were found until I got to an elevation of about 2,000 feet. Here I passed a beautiful little village buried in fruit trees, and surrounded by fine Chestnut and Plane trees. All crops have suffered much from the drought, which is becoming very severe, and will, if rain does not fall soon, cause a famine in this part of Asia Minor, as well as in the north. Leaving the village, and winding up through the wood, the road comes on to the side of a deep narrow valley, which it skirts for some miles, leaving the river a great distance below. This valley reminded me somewhat of those in the upper part of the

Himalayas, though vastly inferior to them in depth and grandeur, and poor, by comparison, in vegetable and animal life. Never shall I forget the marches up the Teesta river, in Sikkim, where for days the roaring of the water was so great that the voice could hardly be heard, and the track led alternately over freshly-fallen and dangerous landslips, or through the dense forest of half-tropical half-temperate vegetation, which, in the Sikkim Himalayas, are so curiously mixed together. On ascending to the higher parts of the Bozdagh, a great change was apparent in the scenery and vegetation, which became quite English in its character. The hills above 3,000 feet are only wooded in small patches, wide spaces of downy hills and rocky peaks filling up the landscape. Willows, Poplars, Oaks, Chestnuts, and Junipers were the most numerous trees here, but will not be in full leaf for another twelve or fifteen days. Here and there the mountains enclose perfectly level plains covered with rich Grass, on which large herds of horses were pasturing. These little plains or yailahs are often surrounded by wooden houses, which the inhabitants of the villages below inhabit during the summer months. Very few flowers, as yet, were out; but the leaves of many bulbous plants were pushing through the soil, and gave promise of a rich harvest to the botanical collector a month or so later. Two or three species of *Crocus* were past flowering, among them the true *Crocus sativus*, the bulbs of which are larger in a wild state than those of any other species. At least two kinds of *Tulips* were common, probably *T. montana* and *T. undulatifolia*, but the bulbs were so weak and so deep in the soil that very few of them showed flower-buds. Several species of *Arabis* and *aubretia* were out; but, in the month of April, the flora of the high mountains was not what I expected. I passed the night in a miserable hut on the shores of the Sidjik Gul, a pretty little lake at about 3,500 feet elevation, surrounded by groves of fruit trees, which, no doubt, in the summer would be a charming spot; and descended the next day to Sart, the ancient Sardis, by another route. Here are some hot springs, over which baths have been erected by the villagers, and which are said to be very efficacious; if bad smells can cure diseases I certainly believe it, for the odour of the springs was most offensive, and had destroyed all vegetation, except coarse rushes, for some distance below them. I now returned to Smyrna, which I finally left on April 25th, having previously made arrangements with a Greek, who knows something of plants, to send me a supply of bulbs in the summer. If anyone wishes to know how rich and interesting the flora of Asia Minor is, let them look over Tchihatcheff's "Asie Mineure," Vol. II., where the whole of the plants are enumerated, and many described; not one-tenth of them are known in our gardens, though many would be well worth growing; and, as the country has been most imperfectly explored, many unknown treasures are sure to await the botanical traveller. In case any other person should think of visiting Asia Minor for this purpose, I should recommend the country between Adalia and Mersina on the south coast, the interior of which, as far as I am aware, has never been visited by a scientific traveller. Mountains rise within sight of the coast to an elevation of 9,000 to 10,000 feet, and, judging by the novelties Kotschy collected in the Cilician Taurus to the eastward, Karamania would offer a splendid field to an explorer. Another little known and interesting district, is that between Samsoun and Trebizond, on the north coast, though the climate is very inferior to that of Karamania. Asia Minor has been strangely neglected by English naturalists, though the antiquaries have done much there; so I hope it will not be long before a competent botanist devotes several years to this interesting and accessible country. In returning home I had to change steamers at Syra, and, in doing so, unfortunately lost a box containing a large part of my plants. Luckily I had saved a few in my vasculum, and sent away a good many to friends, but the loss was none the less very disappointing. Before leaving the island I took a walk in a different direction to the one I tried before, and by great good fortune came on a sixth species of *Fritillaria*, long past flowering, which I believe is a species peculiar to the island, *F. Ehrhardti* (Boiss.). I could only find five or six bulbs, which, however, were fat and well-ripened, and will, I hope, flower in England next

spring. Besides this, there were in flower a very small and pretty *Allium*, two or three *Ophrys* very much burnt by the sun, and an immense *Orobanch* growing in gardens to a height of 3 feet. I had, as before, no time to go far; but if, in these hurried runs over an island so well known and often visited as Syra, I was able to get several bulbous plants, quite unknown in England, it shows what might be done if a well found yacht were to cruise for three or four months in the Levant with a keen collector on board.

Leaving Syra, I arrived in two days at Corfu, where I landed, to await the boat for Brindisi. Traces of the British occupation were everywhere apparent, in the roads, the shops, the gardens, and even in the breeds of cattle, horses, and dogs. After leaving Symrna, than which no more filthy or ill-built town exists, the contrast was most striking; and, though it is now twelve years since the English occupation ceased, the town is still far before Athens, in all but size. Having only a day-and-a-half on the island I could not see much of it, but made an excursion to the top of a mountain about eight miles from the town. Potatoes are largely grown in Corfu, as well as Vines, Flax, and Corn, but Olives constitute the principle crop of the island. I never saw Olive trees finer or more numerous, the whole country being more or less covered with them. Under their shade grew Bracken abundantly, but of herbaceous plants I saw very few worth notice. Several pretty Orchids were common, and on the top of the mountain I found the bulbs of an autumn *Crocus*, a small *Colchicum*, and a few other plants. I was caught in a heavy shower of wind and rain, for the first time since March 21st, the weather having been splendid during the whole of my tour, and hot in the middle of the day. Returning to the town of Corfu, I went to see the gardens originally laid out by the Lord High Commissioner, round his villa on a hill a mile from the town, which, since our evacuation of the island, have been kept up by the King of Greece. They are well worth a visit, being full of fine and interesting trees and shrubs. Most of the Olive trees having been left standing, the grounds are very wild and natural, but the long Grass which covered much of them looked rank and untidy. I found the second gardener, Joseph Buzzai, a very intelligent man and was shown by him all over the place. Loquats (*Eriobotrya japonica*), the fruit of which was fast ripening, Oranges, and Lemons, of many varieties, were the most numerous trees, but many Conifers have been planted of late years. A splendid Judas tree, *Cercis siliquastrum*, was not less than 25 feet high, by 35 in diameter, well-grown; and covered with bloom. *Fraxinus ornus* was now showing its graceful white flowers, which should be better known in England than they are. The twigs of this tree (as Buzzai pointed out to me) when broken and put into water, give it a bluish tinge. Several species of *Musa* were growing, though not thriving in the open air; but *Paulownia grandis* and *Cosmophyllum calalioides* had been killed by the winter's frost. There was a fine young tree of *Cheirontoma siliqua*, 12 feet high, only five years old, from seed, besides many other curious things, such as *Lycoperidium peltatum*, *Scinos pseudopiper*, *Percunia dioica*, and others which are little known in this country. *Acacia tomentosa*, a very pretty sort, covered with light brown hairs, was grafted on *Robinia* and doing well, as were also *Photinia arbutifolia*, *Pittosporum majalis*, and *Justicia arborea*. *Amaryllis longifolia* was abundantly planted and apparently quite indifferent to cold, but it is not a plant I should recommend for small gardens. Whilst wandering through the glades I came on a natural garden of terrestrial Orchids, which, sheltered to a certain extent by long Grass, were growing abundantly and with unusual luxuriance. *Serapias lingua* and *longipetala*, *Orchis laxiflora* (3 feet high), *Ophrys lutea*, *arachnites*, and another beautiful species resembling *ferrum equinum*, with from eight to twelve flowers on a stem, besides one or two other varieties, were crowded as thickly as possible over several square yards of ground. The soil was a heavy and deep loam, much baked by the sun, notwithstanding which, I never saw Orchids growing so strong anywhere else. I got up a good stock of tubers with some trouble, and hope to grow them well in pots, as I am afraid they will not be hardy in England.

On my return home through Italy, I saw, at the Botanic Gar-

dens at Genoa, a fine lot of the native Orchids, planted in a mass of Sphagnum on a hot paved terrace; and, apparently growing well; in which was that rare and curious plant *Isias triloba*, supposed to be a hybrid between *Serapias lingua* and *Orchis longicorne*. It has only been found in the Maritime Alps at a low elevation, and I believe always in the neighbourhood of its supposed parents. I had not time to stay for the Florence exhibition, which was to take place the week after, but saw quite enough of Italy and the Italian flora to make me wish to go again. Hoping that the result of my rambles in the Levant may be to induce others to visit the same country, I have written this slight sketch of what I saw, and should be happy to give fuller information to anyone proposing a similar tour.

H. J. ELWES.

Wild Flowers at Galashiels.—One of the most interesting features of an exhibition which was lately held here was the bouquets of wild flowers shown by children. About 300 of such bouquets were exhibited; some were of a rough-and-ready make, but the greater number of them were neatly and tastefully put together. The most interesting were composed of as many as forty varieties of flowers. The prettiest were those with an under ground-work of flowers dotted over with the heads of many fine and rare Grasses. Fifty prizes were offered, principally in the shape of articles of ornament and use. These were contributed by ladies and others interested in such matters in the neighbourhood. In the case of so many prizes one or two exhibitors do not carry off the whole, and more interest is thus created than if they were fewer. No entry money is required, and each little exhibitor gets a penny, a system which is extending through all the border counties; and the advancement each season, both in the number of entries and the manner in which the bouquets are made up, is highly gratifying, and denotes how thoroughly such encouragement is appreciated. Even at metropolitan exhibitions there need be no want of wild flowers, for woods and fields furnish abundance of them, and those who have not access to these might get enough and to spare growing by the road sides and on public commons. The display at Galashiels would have done honour to even our best metropolitan shows, and I am certain that the simple beauty of the flowers would gratify all, more especially those who have hitherto been satisfied with what may be termed show bouquets.—J. MUIR, *Clovenfords*.

Foxgloves.—Everyone who has seen a hedgerow in summer is familiar with the Foxglove, which is one of the most plentiful of wild flowers. It grows on the very summit of high hills, in recesses, in deep ravines, amongst heaps of stones, about old ruins, amid dense masses of other kinds of vegetation, and often under the shade of large trees. It has been long banished from our gardens, but, I fully anticipate, that when a taste for beautiful and altogether hardy flowers has been re-developed, the Foxglove, and others of its class, will again adorn many quiet spots and corners, which, at present, are nearly void of interest. Foxgloves remain in flower from May until August; the blooms at the bottom of the spike opening before those at the tip are well-formed, and the flowers vary in size according to the quality of the soil in which the plants grow. *Digitalis lutea* and *D. grandiflora* produce fine yellow flowers; *D. gloxiniflora* and *D. maculata* are beautifully spotted; in height they vary from 2 to 4 feet. The genus is not rich in varieties, but, doubtless, many new and superior kinds would soon be forthcoming, were there any demand for them. Those, however, which have just been named are equal in merit to Pentstemons; they are certainly as pretty as Pentstemons, and capable of being made quite as useful. A pure white one grows wild here, which, according to my way of thinking, is well worth attention. In habit, it seems adapted for pot culture, and a fine pot plant it would make; it only grows about 18 inches high and forms a dense mass of dark green leaves and many branching spikes of white flowers; I have occasionally found it in other places in Scotland, but it is by no means common.—J. MUIR, *Clovenfords*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Fuchsia procumbens.—I have just seen flowers and leaves of this pretty creeping New Zealand Fuchsia, and think that it well deserves culture as a basket or window plant or in other positions in which it can be brought near the eye. It has a gracefully drooping habit, bright green leaves, and metallic, purple, yellow, and green-tinted flowers without petals; the filaments are of a vivid crimson colour, and contrast well with the yellow tube.—B.

Tobacco (*Nicotiana Tabacum*).—We have received from Mr. Iverson specimens of two varieties of Tobacco, both of which are now finely in flower in the Regent's Park. The blossoms of the one are deep carmine; those of the other rosy-pink, and both have large and fine foliage, illustrating in a remarkable manner the good effects which the late warm weather has had on the growth of these plants. In summers like this, indeed, Tobacco is worth growing for the beauty of its flowers as well as for that of its foliage.

IN THE TIME OF YUCCAS.

MUCH might be written, and that to good purpose, on the stately effects to be obtained by the judicious planting of Yuccas of different kinds in garden scenery. It is impossible to overlook the beauty of Yuccas, even when planted singly or in formal lines; but, if arranged in bold groups and masses, they are unsurpassed as flowering and foliage plants for outdoor decoration. Just now, and for the next two months, Yuccas will be in flower, and their great panicles of pearly-white bell-shaped blossoms contrast so well with bright green Conifers and low-growing shrubs of less distinct contour, that all through the summer and autumn it is possible to form charming pictures by massing them either on the margins of shrubberies or in sheltered nooks on the lawn and pleasure grounds. This plant is simply invaluable if properly used in forming picturesque groups and clumps instead of being, as is too often the case, dotted indiscriminately here and there on turf in unmeaning regularity. It has been said that the Hollyhock is the only decorative flowering plant of any importance to the landscape gardener. Yuccas are even more stately however, and, moreover, they are permanent in character, being quite as ornamental in winter as in summer. They succeed nearly equally well in any soil, but a deep rich well drained loam is preferable, and they make finer specimens, if sheltered from rough cold winds, than they would do if more exposed. The flowers of all the species (and these are more numerous than many imagine) closely resemble each other, being mostly of ivory-like whiteness within, the backs of the thick wax-like segments being more or less tinted with purple. One of the most conspicuous in this way is *N. tortulata*, or, as it is sometimes called, *N. Ellacombiana*. This bears immense panicles of large flowers, the backs of which are of a deep bronzy-crimson colour. Where all the species are good it is a waste of time to individualise. Much may be made of Yuccas by associating them in well-arranged masses along with other distinct and gracefully habited plants—such as the Pampas Grass, *Arundo conspicua*, hardy Bamboos, Dwarf Fan Palms, and a score of other valuable decorative plants too seldom seen in our gardens. Our engraving shows how a shrubbery recess may be made a charming picture by the use of Yuccas alone; and it is in positions such as these that the flowers show to the best advantage. The kinds here shown are *Y. filamentosa*, on the left, a kind which bears rather lax but graceful spikes of flowers. The central specimen is *Y. aloiolia*, a form generally met with in cool conservatories, although perfectly hardy in sheltered positions in Devon and Cornwall, and it is rather a curious fact that the variegated form of this plant is found by Mr. Ellacombe to resist cold better than the normal kind. Both, however, make noble plants. The right-hand figure represents the common Adam's Needle (*Y. gloriosa*), one of the most robust of all the species; and associated with it is the free and vigorous *Y. recurva*, the most common in English gardens. These last rarely fail to flower every year. Many kinds of Yucca are now flowering at Sawbridgeworth, planted on a slightly elevated bank, where they form an irregular line thirty or forty yards in length. In the Coombe Wood Nursery too, in the Regent's Park, and in Messrs. Osborn's nurseries at Fulham, are noble isolated specimens and clumps of Yuccas, associated with choice Conifers, evergreen shrubs, and other decorative plants; while those who have been fortunate enough to visit Mr. Ellacombe's garden at Bitton, will not readily forget the great masses of *Y. recurva*, which jut out on the fresh mossy turf, backed by choice Conifers and noble forest trees. Among the many advantages possessed by Yuccas over other hardy evergreen plants is the vigorous growth they make in town gardens where many other plants would fail. We have on former occasions alluded to the adaptability of Yuccas for balcony decoration, for which, perhaps, no other class of plants, except Agaves, is so well suited. Yuccas have been grown in English gardens for nearly three hundred years, and yet they are far from being plentiful. Since the above was written, we have seen a grand mass of these plants on the over-hanging banks of a small lake, where, associated with dark-leaved Yews, bright green Weeping Willows, and similar waterside vegetation, their effect was excellent.



GROUP OF YUCCAS IN THE BLOOMING SEASON.

THE FRUIT GARDEN.

CRANBERRY CULTURE.

By E. W. CRANE

THE Cranberry is found growing wild in many parts of the world. It belongs to the Heath family, and the genus *Vaccinium*. The European Cranberry (*V. oxycoccos*), a small mottled berry, grows in some parts of England, Scotland, Germany, and Sweden, and on the steppes of Russia; the same species is found in different portions of the United States, but we do not hear that it has been successfully cultivated in either country. The American Cranberry (*Vaccinium macrocarpum*), is found in most or all of the States, from Maine to the Carolinas, in Oregon and Washington territories at the north-west, in the British possessions, and even in Alaska. It is much larger than the European, and of greatly superior flavour,—also generally of a darker and brighter colour when mature; while growing, it is of a light green, which changes in ripening to a light or dark red, or crimson, and sometimes to a mottled colour, the berry being from one-fourth to 1 inch or more in diameter. It blossoms in June and the fruit ripens in September and October. The runners of the plants are from 1 to 8 or more feet in length, and with oblong leaves. It may properly be called an evergreen, though the leaves turn to a brownish hue during the fall, especially when the vines have been cultivated, and set in sand. The American Cranberry is divided, by growers and writers on this subject, into three leading varieties:—1. The Bell Cranberry, so called because of its fancied resemblance in shape to a bell.—2. The Bugle Cranberry, somewhat resembles a bugle head, is elongated, and approaches an oval in shape.—3. The Cherry Cranberry, is so called from its similarity in size, shape, and colour to the Cherry. These varieties too, run together, and produce intermediate ones.

The plants also differ; some are of a shorter growth than others, and apparently produce more fruit and less growth of plant. These are of course to be preferred, but, until recently, little attention has been given to this subject, it being popularly supposed that the wild nature of the Cranberry could not be successfully altered to any great extent, for which there has been some foundation in fact, but experiments are now in progress, which will doubtless add to our knowledge on this point, as well as others of interest in regard to cultivating the fruit. No other species of which we know, is so successfully cultivated anywhere, as is this, in the United States,—between 38° and 45° north latitude—though it is said that this limit may be extended several degrees southward in the Alleghanian ranges; and also several northward, on our western coast, on account of the peculiar influence of the ocean currents upon the climate. A medium between these latitudes is preferable, though there are but comparatively few localities where all the requisites of soil, sand, water, and climate are to be found; and less land is well adapted to their growth than to almost any other fruit. These requisites, however, are believed, by careful observers, to exist in greater perfection in Southern New Jersey, than in any other state, or part of the world. The first attempts to cultivate this fruit, of which we have any knowledge, were made by Captain Henry Hall, of Dennis, Mass., on Cape Cod, in the year 1812, sixty-two years ago. I have recently learned, through his family, that the original plants last year yielded a fair crop, as they have hardly ever failed to do since they first came into bearing. His townsmen, for a while, ridiculed his efforts, but seeing his success soon began to experiment themselves, and with good results. Many difficulties, however, were encountered, and it was nearly forty years before the Cranberry was generally cultivated on the Cape, which locality for a time almost entirely supplied our markets. B. F. Small, Esq., now of Orange in this State, related to me some time since, that he remembered that when his father Captain Z. H. Small, of Harwich, Mass., one of the earliest and most successful cultivators, after several years' efforts, succeeded in getting a crop of 100 barrels, it was thought that he had indeed overstocked the market, and it was with some little difficulty that he disposed of the fruit at low prices, much lower than growers have generally since received, notwithstanding that the production has increased a hundred-fold. The best locations for the growth of the Cranberry are peat bottoms, with adjoining banks of pure sand (for covering the plantation before the plants are set), and so situated that they can be completely flowed by living streams during the winter, as well as thoroughly drained at other seasons of the year. Many growers have a decided preference for Cedar swamps, and (although other bottoms are sometimes perhaps equally as good) they are considered, when favourably located, as rather the surest, though more expensive to work. Cranberries grow well, also, on good "savanna," which is a mixture of peat and sand—but not so abundantly, nor do they last so long as on peat bottoms. The recommendation of the late Prof. Agassiz, to avoid the drift formation, or that portion of it consisting of rocks not in

place, gravel, clay loam, &c., has been found correct in practice. Many experiments have been made on this kind of land, but nearly all of them have proved failures. Dr. Cook, our State Geologist, states, that even muddy water running over the vines is extremely detrimental, if not fatal, to their growth. In preparing a plantation the surface must first be cleared of the wood, timber, or brush; then it must be "turfed,"—that is the surface soil and roots must be taken off with a hoe made for that purpose; the next step is to ditch it, by clearing out the main water-course, and digging side drains running into it—generally in deep, bottom lands, about one and a half or two rods apart, but the distance should be varied in accordance with the nature of the ground. The floats removed in turving are used for levelling up low places where needed, so that the surface may be slightly rounded between the side drains; they are also used for building the dam, which is constructed with two walls of the floats, filled in with sand, a ditch having first been cut between them to the sand beneath; the solid filling makes it water-tight.

After turving and ditching, peat bottoms must be sanded to the depth of from 4 to 6 inches with pure sand, without mixture of clay or loam, and it should be taken at a sufficient depth below the surface to avoid seeds. The silex imparted to the plant from the sand materially promotes its productiveness, and also tends to prevent the growth of weeds. Many experiments have been made to ascertain the proper depth to which the sand should be applied; where little or none is used, the vines grow long and slender, and do not fruit so well as when sanded. While some have thought 2 inches sufficient, others have tried a thickness of 12 or more, and with good results; though with this amount the plants make a slower growth on account of the length of time required for the rootlets to reach the peat beneath, from which they draw their support. Most cultivators, however, have concluded that the above depth (from 4 to 6 inches) is about right for bottom lands when prepared, though it should be varied somewhat according to the nature of the soil (deep muck requiring most), and that re-sanding every few years with a layer of from 1 to 2 inches, is preferable to using a much larger quantity at first. The sand is generally obtained in the banks adjoining the edges of the swamps, from which it is brought, if a short distance, in wheelbarrows, and if a long one, by means of a dump car and portable track. In some localities, however, it can be more easily obtained by sinking pits to the layer beneath the peat—when the latter is not too deep—from which it is thrown up and spread over the surface. The pits are filled up with floats, &c., allowed to settle, and then covered with sand. After sanding, the vines are set in rows about 20 inches apart, and but a moderate quantity of vine should be used for each hill. This is the usual method, though the distance is often varied either way. Mr. Gowdy has, from recent experiments, concluded that the vine should not be set over a foot apart, and that the additional cost of the vines, &c., will be more than paid by earlier and larger crops, as well as by the matting of the vines in much less than the usual time—which keeps down other vegetation, and saves labour and expense in cleaning.

Plantations should be well flowed with water from December until May. The water fertilises the vines, protects them from frost, and is the only reliable remedy known for the vine worm, which is one of our worst enemies. It is thought that the warmth of the water, where held on the vines to the 10th or 15th of May, destroys the eggs deposited on the leaves of the previous year; hence the advantage not only of late, but thorough flowing, as the portions not flowed often constitute a hatching ground for the worms, from which they spread to the adjoining vines, though it has been noticed that they apparently prefer not to go much beyond the water line, if they can find sufficient vines that have not been flowed. It is best to keep the ground free from weeds and Grass for two or three years after the vines are set; the ditches should also be cleaned of the sand, &c., which frequently runs into them. This costs usually from 10 to 20 dollars a year per acre, but if carefully done on well located and properly prepared land, the expense is afterwards, as a general thing, comparatively slight, as the vines should by that time have possession of the ground, and prevent, to a great extent, the growth of other vegetation—and with an occasional re-sanding to the depth of from 1 to 2 inches, which produces a new growth, the plantation will last a great number of years—in fact, indefinitely—for, as before mentioned, the original vines set on Cape Cod more than sixty years ago, last fall produced a fair crop. Some growers, especially on the "Cape," occasionally mow off the old vines in order to obtain a new and vigorous growth, and savanna plantations have been renewed, by carefully ploughing them up, in which case, the vines come up between the furrows, and spread over the whole surface. When either of the last mentioned methods are practised, there is generally a loss of one or two crops, which there need not be by the first one, if the work has not been

too long delayed, so that there is a large growth of old wood. It may be said, however, in favour of mowing, that where the Vines are good, and there is a demand for them for setting, they will often sell for as much as a crop of fruit, or perhaps more. The berries ripen in September and October. The "picking season" generally commences about the 10th or 15th of September, lasts from four to six weeks, and furnishes employment to thousands of women, girls, boys, and sometimes men. A good plantation at this season, with its rich load of fruit, presents a beautiful as well as a lively scene. Good pickers will generally pick about three bushels per day, though some have picked as high as four or five, and even more. Many of the younger ones, however, will pick but one bushel, so that in a force of fifty or one hundred pickers they generally average, in good work, about two bushels per day. The berries are generally emptied from the pickers' baskets or boxes into crates or barrels, in which they are carted to the place where stored. For storing, a dry well ventilated cellar is generally preferred, and crates are better than barrels, because more conveniently filled, and if strips are placed between them, as they always should be, a good opportunity is given for the circulation of air, and it is thought that they will keep better. The berries are then shipped principally to the great Cranberry markets of New York and Philadelphia, many of them without re-sorting, though the most careful growers now re-sort and screen their fruit if kept long after picking, before shipment; it should also be carefully looked over when picked, and the packages well filled just before shipping, both to give satisfactory measure, and because they carry better in full packages. The standard packages are barrel, bushel, and peck. The barrel adopted is the same as the standard barrel of the Cape Cod Cranberry Growers' Association, which secures uniformity when their fruit comes into competition with ours. It is made of 28½ inch staves, so jointed as to give a bilge of 7½ inches; heads 16½ inches in diameter, and set in staves so as to leave the inside measurement 25½ inches. The finished barrel is about 28½ inches in height, and contains three bushels rounded measure. The bushel crate measures 8½ inches by 12 inches by 22 inches, inside, exclusive of the middle partition, contains 2,211 cubic inches, and holds one bushel, rounded measure—just one-third as much as the barrel. The peck crate, or box, measures, 6 inches by 8½ inches by 11 inches, contains 552½ cubic inches, and has one-quarter the capacity of the bushel box. The "round" in all consists of 3¼ quarts per bushel, in addition to "struck" measure. The packages hold just the quantities mentioned when well filled, as packages of Cranberries should always be for shipping.

But little fruit can be expected until the plants are three or four years of age, when they should begin to bear paying crops, which should increase yearly for two or three years, when they are said to be of full bearing age, and with the attentions mentioned, on well-selected and properly prepared land, should last indefinitely. An average of 100 bushels per acre for a plantation, though not an immense yield, is considered a very good one. Many have exceeded it, but many more have fallen below; and, probably, an average crop for all classes of land in a good season would not exceed 50 bushels to 75 bushels per acre. Probably, the best crop on record for 1 acre, was that of 1 acre of the celebrated Oxycoocis plantation of Mr. N. H. Bishop, of Manahawkin, in 1872, from which was sold 423 bushels for 1,809 dollars gross, though parts of acres have yielded at higher rates than the above. A few rods of one of our own plantations yielded, during the past season, at the rate of over 700 bushels per acre, and larger rates still are reported for 1 or 2 rods; but these, of course, are exceptional cases. Single crops, however, have often paid fifty per cent., and even more, on the original cost. Some, however, think that such profits will not again be realised, and it cannot be denied that many have lost money in the business. Some plantations have proved failures, and others, doubtless, will do so, though most of them occur on poorly selected land, on which the work has perhaps been imperfectly done at first and afterwards neglected. No ground should be prepared for Cranberries unless it can be completely flowed, and those engaging in the business should either have a practical knowledge of it themselves, and give it their personal attention, or first secure the services of some one who has—for the capital invested is frequently lost either through ignorance or carelessness.

[The above is an abstract from an admirable paper in "The Report of the New Jersey State Agricultural Society," which tells the interesting history of Cranberry culture in that State, so well suited to its culture in many parts. The fruit is an excellent one which could be cultivated on many of our own peaty lands. The following are the best tested modes of cooking and preserving Cranberries. It may be noted that they are extensively preserved in tins.]

Keeping Cranberries.—Select sound berries, and store in crates or shallow bins, or spread on floors, not more than 8 or 10 inches in depth, where the direct rays of the sun cannot affect them. A dry,

well-ventilated room or cellar is best; damp cellars and hot rooms should be avoided, and the temperature kept as even as possible. In this way the fruit will keep a long time.

General Remarks on Cooking.—As a preliminary to all receipts, it may be remarked, to save repetition, that very soft berries should first be removed, and those remaining thoroughly washed, after which they should be placed in scalding water for about two minutes, and then taken out; this removes a portion of the acidity, and a little less sugar will be required. Be particular to use fine white sugar (granulated is best), and not too much water: the proportions given of each, it is thought, will suit the majority of tastes, but when found otherwise, the quantities can be made larger or smaller, though in using a great deal more sugar the distinctive Cranberry flavour will be partially lost; some may prefer one pound of sugar where the amount specified is three-quarters, but probably others will be better pleased (if changed at all), to make it smaller, perhaps one-half a pound, especially for dinner sauce, which makes the preparations at least very palatable, and has the advantage of economy; but when desired to keep a long time, without canning or sealing, a larger quantity should be used. On account of the acidity of the fruit it is preferable, though not positively necessary, to use porcelain lined cooking utensils.

Receipts.

Cranberry sauce is the great American Cranberry dish, and the most popular one for general use, either for dinner or tea. As a relish for game, poultry, and meats of all kinds, it is unequalled. To every pound of fruit add three-quarters of a pound of sugar and half-a-pint of water. Stew them together over a moderate but steady fire. be careful to cover and not to stir the fruit, but occasionally shake the vessel, or remove to a gentler heat, if in danger of sticking or burning. Attention to these particulars will ensure the berries retaining, to a considerable extent, their shape, which is so desirable, and adds greatly to their appearance on the table. Boil from five to seven minutes, when they should be removed from the fire, turned into a dish, and set aside to cool. If to keep, they can be put at once in air-tight jars. This is preferred by many to strained sauce, but where that is desired, one and a half pounds of fruit should be stewed in one pint of water for ten to twelve minutes, until quite soft, then strained through a colander or fine wire sieve, and three-quarters of a pound of sugar thoroughly stirred into the pulp thus obtained, when, after cooling, it is ready for use.

Pies and Tarts may be made from either of the above preparations, no upper crust being necessary, except, if fancied, in the shape of narrow-crossed strips.

Covered Cranberry Pies (which were known, are generally considered superior to those above-mentioned), may be made as follows: make an upper as well as an under crust, completely encasing the berries, which should be put in raw, with a quantity of water equal to about half their bulk, and sugar in the proportion of three-quarters of a pound to one pound of fruit, care being taken to sprinkle it well around the edge; also if desired, sift a little wheat flour over them to thicken the pulp. Bake same as an Apple pie, and eat hot.

Cranberry Jelly.—To each pound of fruit add half-a-pint of water; after the berries become very soft by cooking, strain through a bag, and add one pound of sugar for every pint of juice. Boil and skim until jelly is produced, which can be tested by occasionally dropping a little in cold water; when it falls to the bottom without mingling with the water, the jelly is done, and should be taken from the fire. Pour while warm into glasses or moulds (having first rinsed them with cold water to prevent sticking); and set in a cool room to harden. Another, and simpler method, which produces beautiful jelly, and is preferred by many (though it will not keep a long time) is to add the sugar to the juice without further boiling, by sprinkling and thoroughly stirring it in. If the above quantity of sugar should not make it quite stiff enough, add a little more, and after pouring out, let it stand several hours to harden.

Preserved Cranberries.—Dissolve three-quarters of a pound of sugar in half-a-pint of water, and after bringing to a boil, add one pound of light or cherry-coloured berries (not allowing them to be over 2 inches in depth on the bottom of the kettle, which should be covered), and cook until they begin to break, when remove them with a strainer to a deep jar or dish, allowing the syrup to remain three or four minutes longer, and then pour it over the berries, which can be set aside for immediate use, or sealed up in glass jars as desired.

Sweet Pickled Cranberries.—Prepare the large berries by punching a few holes in each with a large needle; this will allow the pickle to enter the fruit. To a pound of berries add half a pound of sugar dissolved in a quarter of a pint of vinegar. Cover the

vessel, and cook from eight to ten minutes (if boiled too long they will not remain firm), when remove them from the pickle, and continue boiling it until it thickens; then pour it over the berries, adding spices to your taste.

THE ARBORETUM.

PEACH-LEAVED CHERRY.

(*CERASUS PERSICÆFOLIA*.)

THIS shrub, the *Prunus Pennsylvanica* of Aiton, is a native of North America, probably of Pennsylvania, whence it is said to have been introduced into France by Michaux. It forms a very handsome hardy shrub, with narrow lance-shaped leaves, borne on reddish leaf-stalks, of a lively shining green colour, sometimes marbled with yellow. The flowers, which begin to appear about the middle of April, are white with yellow anthers, and very numerous, on long thin stalks, and are arranged in umbel-like clusters. The fruit, which are about



Cerasus persicæfolia.

the size of Peas, are also very abundantly produced; and, being of a glistening red colour, give the tree a highly ornamental appearance, hardly inferior to that which it exhibits when in flower. *C. persicæfolia* appears to be closely related to *Prunus reclinata* (Bosc.). It is easily multiplied by grafting on the *Cerasus Mahaleb*, on which it succeeds to perfection. This shrub, if more widely known, would, no doubt, take a prominent place among our ornamental flowering shrubs.

W. M.

MOCK ORANGES AND DEUTZIAS.

AMONG Mock Oranges a large number of handsome species are natives of Europe, Asia, and America, generally hardy, and well adapted to the soils and climate of Britain. All the sorts have beautiful white flowers, in some cases delightfully fragrant, and both in general appearance and perfume resembling those of the Orange tree. These fine plants were much better known and more extensively cultivated by the gardeners of the last generation than they are now; but notwithstanding the numerous grand accessions to hardy shrubs of late years, they have many qualities which still entitle them to the attention of the decorative planter; their free vigorous growth, in the poorest soils, and their adaptability to either sunny or shady situations, combined with their attractive foliage and showy blossoms,

render them invaluable wherever robust, bushy, and, at the same time, really handsome shrubs are to be desired. Of the species and varieties of Mock Orange or *Philadelphus* in cultivation, we recommend the following as specially distinct and interesting:—

P. coronarius (the Garland Mock Orange).—This species is said to have been introduced into British gardens so long ago as 1596, and thus may fairly be ranked among “old-fashioned” plants. It is, however, handsome enough to be associated with the finest of the new shrubs of robust growth, producing the happiest effects when planted on the margins of plantations of trees, woodland drives, or large shrubberies; while no plant thrives better amid the dust and smoke of towns. It forms an abundantly branched, densely foliaged, broad bush of from 10 to 15 feet in height, bearing its bunches of creamy-white orange-scented blossoms in June, and generally in great profusion. The leaves are ovate, acuminate, and serrated, of a deep green colour above, and paler beneath. It is hardy enough for the most exposed situations; and as regards soils, prefers such as are light and porous.

The undernoted varieties are no less hardy and interesting than the parent, and as they are distinct and ornamental, should be extensively cultivated; *Flore pleno* has double flowers; *Variegatus*, with its leaves margined with a prominent white variegation which they retain during the season, and which, apart altogether from its showy flowers, gives the plant a charming effect; *Nanus* is a neat-growing miniature form, rarely rising above 2 feet from the ground, and useful for rockeries, front rows of shrubberies, or any arrangement of compact dwarf plants.

P. grandiflorus (the Large-flowered Mock Orange), is a North American species, and has been in cultivation since the beginning of this century. It is a very hardy vigorous shrub, growing freely in most situations and soils if dry and porous, having a thickly-branched broad-spreading habit of growth, and rarely higher than about 15 feet. The leaves are ovate, with a long acuminate tip, and prominently dentated. The snow-white flowers are large and showy, but scentless, and are in perfection in June or July. The variety called *speciosissimus*, has larger flowers, and is said to produce them in greater abundance than the species. Both are very ornamental, and may be used with great advantage for similar purposes to those for which we have recommended *coronarius*.

P. verrucosus (the Warted-leaved Mock Orange) is another North American species introduced about 1800. It is a hardy and a most vigorous-growing shrub like most of its congeners, thriving best in dry light soils, and forming a close bush of about 15 feet high. The leaves are elliptic, acuminate, light green above, slightly pubescent and curiously warted on the mid-rib and veins below. The flowers, which are produced in most seasons very abundantly in racemes, are pure white, expanding in May or June. It is a most beautiful and distinct-looking flowering shrub, very showy when in bloom.

P. Gordonianus (Gordon's Mock Orange).—This species is indigenous to the north-west coast of North America particularly in the vicinity of the Columbia river, where it occurs in woods covering vast tracts as undergrowth. It was first sent to this country in 1823, is of free growth in any kind of garden soil, and hardy enough for any situation. This fine species, though wanting the sweet fragrance so pleasing in some of the others, is most desirable, and should never be overlooked in making a selection of strong-growing flowering shrubs. The habit of growth is broad and bushy, the branches long, and so slender in proportion to their length, that they have a somewhat drooping appearance. The leaves are ovate, acute, and of a beautiful warm green colour. The large white flowers, which in genial seasons are produced in such abundance that they almost cover the foliage, generally come out in July.

P. speciosus (the Showy Mock Orange), also from North America, and introduced about 1800, is another very hardy, free-growing, and free-flowering species, with a broad, bushy, densely-branched habit of growth, of from 12 to 15 feet in height. The leaves, which thickly clothe the long slender branches, are ovate, sharply acuminate, prominently serrated, of a deep green on the upper surface, and pubescent below. The flowers are pure white, and are generally in perfection early in June. When in bloom it has an admirable effect, and, having a graceful and distinct appearance, it is eminently worthy of admission to any shrubbery. It should always be planted in an open sunny situation.

Deutzia.

This genus, so named by Thunberg in compliment to the accomplished Dutch naturalist John Deutz, though quite distinct in general appearance, is botanically nearly allied to *Philadelphus*. As yet there is a very limited number of species and varieties in cultivation, and these, though natives of India and Japan, are either quite hardy in our climate, or sufficiently so to withstand the rigours of an

ordinary winter in a sheltered situation. All the sorts are deciduous moderate-sized shrubs, and remarkable for their showy flowers, which, in favourable circumstances, they produce in great abundance. From the facility with which they may be forced into bloom, these beautiful plants are extensively used, and form an important feature in the winter and early spring decoration of greenhouses and conservatories.

D. scabra (the Rough-leaved Deutzia).—This species is indigenous to mountainous districts in Japan, and was first introduced in 1832. In that country it is a favourite ornamental shrub, and is frequently seen not only in gardens but as a hedge plant. In our shrubberies it forms a strong-growing broad bush of about 6 feet in height. The leaves are ovate, acuminate, serrated, and covered with minute, stellate, silicious hairs; which, we may notice, are singularly interesting objects for examination by the microscope. The starry snow-white flowers are produced in compound panicles, in May or June, and when in perfection have a splendid effect. It requires a light, well-drained soil, and a sheltered situation—open, however, to the full sunshine, that it may be enabled to ripen its growths thoroughly before the winter sets in.

D. gracilis (the Slender Deutzia).—This superb little shrub is also a native of Japan, and was introduced about 1835. It is of a dwarf bushy habit of growth, rarely seen higher than about 3 feet. The branches are numerous, very slender, and abundantly clothed with smooth, lanceolate, dentated leaves of a bright green colour. The pure white flowers are produced in axillary panicles, and in ordinary seasons are in perfection in May. Though quite hardy if planted in a light dry soil and in a sheltered situation, and though naturally the most profuse-flowering of the genus, it is only in exceptionally favourable seasons that its full beauty is developed in the open air in this country. It is, therefore, chiefly as a greenhouse plant or for forcing that it is now so extensively grown; and it is one of the best known and most popular of winter and early spring conservatory flowering shrubs. For this purpose it is usually kept in pots, and plunged in a sunny border out-of-doors during the summer months, freely watered during the growing season, the supply being gradually diminished as the shoots begin to ripen, and the leaves show signs of decay. On the approach of winter the plants are stored under glass, to protect them from frost, and transferred into the forcing-house from time to time, thus securing a succession of bloom, if desired, from January till May. As they are easily excited into growth, a gentle heat is all that is either necessary or desirable, unless, indeed, they are required very early, in which case it is best to put them into a warm temperature as soon as possible after the leaves fall. While growing freely, and immediately before the flowers expand, a dose of weak liquid manure will be found very beneficial in assisting the free development of both foliage and flowers. For pot-culture a compost of three parts fresh light loam and one part well-rotted leaf-mould, with a liberal allowance of sharp sand, is found to suit admirably. A well-managed specimen of this lovely plant, with its fresh, warm, green leaves and graceful blossoms, has a charming effect in winter, and is not only invaluable for decoration, but supplies the most beautiful sprigs for hand-bouquets, surpassing in everything but fragrance the much-admired Orange-blossom, for which they might easily be mistaken.

D. crenata plena (the Crenulated-leaved Deutzia).—This magnificent, free-growing, hardy shrub is a native of Japan, and was sent home by Mr. Fortune in 1860. It has a handsome, open, slender-branched habit of growth, and is quite distinct, both in foliage and flowers, from any of the other species. The leaves are ovate, acute, crenulated, and of a light-green colour; the flowers are produced in large terminal racemes, double white, and the petals punctately tinged on the outer surface with deep rose. Though requiring a sheltered situation, it is quite hardy, and, in favourable circumstances, flowers freely in the open air. Like *gracilis*, it is an admirable forcing shrub, and when treated in a similar manner to that species, gives a grand feature to the conservatory during the winter months.—*The Gardener*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Abies Gordonii.—The *A. Gordonii* of Carrière, to which allusion is made in your last number (p. 73), is the *Picea grandis* found on Vancouver's Island. It differs slightly from the *P. grandis* of Douglas, inasmuch as it has somewhat larger leaves, but in other respects it is the same.—George Gordon.

The Catalpa as a London Shade Tree.—The *Catalpa* in the South Lambeth Road, of which I think there was a notice in an early number of *THE GARDEN*, was a beautiful sight when I passed it the other day. It was covered with handsome panicles of blossom, and was well worth going some distance to see.—F. H.

Branch-shedding in Trees.—It is a character of some trees, of the Elm in particular, to drop large branches during the hot months, without any external warning beyond, perhaps, a preliminary crack or two. The branches that thus suddenly snap are as verdurous as any of the others; and there seems to be no other defence than to avoid "the Elm tree's shade" as much as possible.

SQUILLS (SCILLA).

This family is now becoming of so much importance in our gardens in spring, that a full account of the known species from a botanical point of view, can hardly fail to be suggestive to the lover of hardy bulbs, and useful as a reference in the naming of species. *Scilla* is a somewhat extensive genus of bulbous plants, containing seventy-two species, mostly of low stature, with linear or thong-like, lance-shaped, radical leaves, usually appearing together with the flowers. Flowers, numerous, small, bell-shaped or tubular, in racemes, of a deep sky-blue or rosy-purple colour, seldom greenish or whitish; pedicels, not articulated; bracts, linear or deltoid, solitary or in pairs, seldom obsolete. A few species (two of which, *S. bifolia* and *S. sibirica*, are of rare beauty) are cultivated in our gardens, and thrive to perfection in a compost of rich fibrous loam and sand.

Key to the Species.

Sub-genus 1. Eusquilla.—Segments of the perianth (or flower) spreading from the base; filaments, in a single series, springing from the lowest part of the base of the segments.

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|--|-----------------------------|
| Ovules, solitary in the cell of the ovary (Barnardia, Lindl.); leaves, two or three; capsule, turbinate; leaves, somewhat hard, 2 or 3 lines in diameter | 1. <i>chinensis</i> |
| Leaves, herbaceous-fleshy, 4 to 6 lines in diameter | 2. <i>japonica</i> |
| Leaves, four to six; capsule-globose | 3. <i>numidica</i> |
| Ovules, in pairs in each cell (<i>Prospero</i> , Salisb.); bracts, obsolete; leaves, produced after the flowering is over; pedicels, 2 to 4 inches long; leaves, nearly cylindrical, $\frac{1}{2}$ line in diameter | 4. <i>autumnalis</i> |
| Leaves, linear-lance-shaped | 5. <i>obtusifolia</i> |
| Pedicels, 12 to 21 lines long | 6. <i>Hamburii</i> |
| Bracts, solitary; leaves, produced along with the flowers; flowers, small, from 1 to 2 lines long; leaves, fleshy-herbaceous, smooth, with sunken veins; leaves, lance-shaped, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches across | 7. <i>latifolia</i> |
| Leaves, thong-like, 6 to 15 lines across; leaves, two to three | 8. <i>hemorrhoidalis</i> |
| Leaves, five to eight; bracts, as long as the pedicels | 9. <i>Bertheloti</i> |
| Bracts, very minute | 10. <i>messenica</i> |
| Leaves, linear thong-like, 2 to 4 lines across | 11. <i>pratensis</i> |
| Leaves, stiff and leathery, with veins raised in relief; leaves, pubescent; perianth, white | 12. <i>Gerrardi</i> |
| Leaves, smooth; perianth, rosy-purple | 13. <i>firmifolia</i> |
| Perianth, 2 to $2\frac{1}{2}$ lines long; bracts, deltoid | 14. <i>hyacinthoides</i> |
| Perianth, 4 or 5 lines long; bracts, elongated-linear | 15. <i>Lilio-hyacinthus</i> |
| Bracts, in pairs; leaves produced along with the flowers (<i>Somera</i> , Salisb.); leaves, two, seldom three, lance-shaped | 16. <i>Aristidis</i> |
| Leaves, four to six, elongated, thong-like | 17. <i>italica</i> |
| Ovules, few or several, placed over each other in the cell; bracts, small, deltoid, sometimes obsolete; flowers, one to three, slightly drooping | 18. <i>sibirica</i> |
| Flowers, three to twelve, or more, erect; flowers, usually two, seldom three or four | 19. <i>bifolia</i> |
| Flowers, always four or five | 20. <i>amona</i> |
| Bracts, solitary, elongated, linear; species, natives of the Mediterranean region and Western Europe, with a sessile ovary; racemes, deltoid, or nearly in corymbs; racemes, bearing from 50 to 100 flowers | 21. <i>peruviana</i> |
| Racemes, bearing from six to fifteen (seldom twenty) flowers; leaves, ciliated at the margin; perianth, 3 lines long | 22. <i>Cupani</i> |
| Perianth, 4 to $4\frac{1}{2}$ lines long | 23. <i>villosa</i> |
| Leaves, smooth at the margin | 24. <i>verna</i> |
| Racemes, oblong; leaf, solitary | 25. <i>monophylla</i> |
| Leaves, three or four | 26. <i>odorata</i> |
| Species, natives of the Cape, with a stalked ovary; leaves, stiff and leathery, with veins raised in relief; perianth, whitish; bulb, crowned on the top with numerous bristles | 27. <i>rigidifolia</i> |
| Perianth, sky-blue; bulb, without bristles | 28. <i>Krausii</i> |
| Leaves, fleshy, herbaceous, with sunken veins; perianth, sky-blue; bracts, 9 to 12 lines long | 29. <i>natalensis</i> |
| Perianth, whitish; bracts, 2 to 3 lines long; leaves, linear, thong-like, 4 to 6 lines across | 30. <i>versicolor</i> |

- Leaves, lance-shaped, thong-like, 12 to 15 lines across ... 31. *pallidiflora*
 Bracts, deltoid, in pairs ... 32. *Hohenackeri*
 Bracts, linear, in pairs; leaves, linear, 2 to 3 lines across ... 33. *vincentina*
 Leaves, tongue-shaped, thong-like, 4 to 6 lines across ... 34. *lingulata*
 Doubtful species of this sub-genus ... 35. *lusitanica*
 ... 36. *plumbea*
 ... 37. *flecosa*

Sub-genus II. Ledebouria.—Segments of the perianth remaining united for some considerable time at the base, and forming a cup there. Filaments usually in a single series, and attached above the base of the segments.

- Flowers, small (1 to 1½, seldom 2, lines long), and usually of a roundish bell-shape; perianth, of a deep rose-purple on the inside; leaves, broad, somewhat stalked; raceme, dense; leaves, ovate-oblong ... 38. *Sandersoni*
 Raceme, loose; leaves, ob-lanceolate ... 39. *revoluta*
 Leaves, narrow, not contracted at the base; flower-stem, slender, 1 to 3 inches high; racemes, oblong; perianth, roundish, bell-shaped; leaves, narrowly linear ... 40. *minima*
 Leaves, lance-shaped ... 41. *ceigua*
 Perianth, oblong, bell-shaped ... 42. *Barberi*
 Flower-stem, stout, 5 to 6 inches high; raceme, cylindrical ... 43. *Cooperi*
 Perianth, greenish; leaves, stalked; leaves, ovate-lance-shaped ... 44. *zambesiaca*
 Leaves, thong-like ... 45. *Camerooniana*
 Leaves, oblong-lance-shaped, narrowed, from the base up, for one-third of their length ... 46. *prasina*
 Leaves, lance-shaped, scarcely narrowed at the base; perianth, roundish-bell-shaped ... 47. *Ludwigii*
 Perianth, oblong-bell-shaped ... 48. *mesta*
 Perianth, 2 or 3 lines long, roundish or oblong-bell-shaped; leaves, appearing after the flower-stem ... 49. *undulata*
 Leaves, appearing along with the flowers; racemes, over-topping the leaves; leaves, stalked, or almost so; ovary, not prolonged into a disk at the base (tropical species); leaves, rounded at the base, above the leaf-stalk ... 50. *Curreri*
 Leaves, narrowed into a wedge-shape at the base; leaves, in opposite pairs ... 51. *Richardiana*
 Leaves, three to eight, forming a rosette; leaves, obovate-oblong, obtuse ... 52. *maculata*
 Leaves, lance-shaped-oblong, acute; perianth, roundish-bell-shaped ... 53. *indica*
 Perianth, tubular-bell-shaped ... 54. *lilacina*
 Leaves, sessile, scarcely narrowed at the base; perianth, greenish; leaves, usually two, opposite ... 55. *paucifolia*
 Leaves, three or four, forming a rosette ... 56. *socialis*
 Perianth, rosy-purple on the inside ... 57. *lanceafolia*
 Leaves, as long as, or longer than, the racemes; perianth, greenish both on the inside and outside; filaments, greenish ... 58. *concolor*
 Perianth, purple on the inside; filaments, deeply coloured; leaves, linear, 4 to 9 lines broad in the middle; flower-stem, curved, 3 or 4 inches long ... 59. *linearifolia*
 Flower-stem, erect, 5 or 6 inches long ... 60. *concinna*
 Leaves, lance-shaped, thong-like, 10 to 12 lines across; leaves, glaucous, distinctly narrowed at the base ... 61. *subglaucia*
 Leaves, green, scarcely narrowed at the base ... 62. *lorata*
 Leaves, tongue-shaped, lanceolate, 18 to 21 lines across, scarcely narrowed at the base ... 63. *zebrina*
 Leaves, oblong, spoon-shaped, very much narrowed at the base ... 64. *spathulata*
 Flowers, large; perianth, oblong-bell-shaped, 4 or 5 lines long; racemes, very loose; leaves, distinctly stalked ... 65. *Kirkii*
 Leaves, not stalked ... 66. *lanceolata*
 Racemes, dense; central pedicels, 6 to 8 lines long ... 67. *gloribunda*
 Central pedicels, 12 to 15 lines long; racemes, containing from thirty to sixty flowers on very slender pendulous pedicels ... 68. *pendula*

- Raceme, containing from 150 to 200 flowers, on stout closely-set pedicels ... 69. *princeps*
 A doubtful species of this sub-genus ... 70. *viridiflora*

Sub-genus III. Endymion.—Segments of the perianth remaining united, for a considerable time, half-way up from the base; filaments, in two distinct unequal series, and inserted above the base of the segments.

- Perianth, roundish-bell-shaped ... 71. *hispanica*
 Perianth, tubular-bell-shaped ... 72. *non-scripta*

Sub-genus I.—Eusilla.

Perianth, blue, rarely purple or whitish; segments patent, wheel-like, in the fully expanded flower; filaments in a single series inserted at the lowest part of the base of the segments; ovary, sessile; cells containing two ovules or more (seldom only one); bracts, linear, solitary or in pairs; or small and deltoid; rarely obsolete.

1. S. chinensis (Benth. "Flor. Hong Kong").—Bulb, ovoid, 9 to 12 lines in diameter; leaves, two or three in number, produced along with the flowers, as long as, or longer than, the flower-stem, 2 or 3 lines broad, somewhat hard, many-nerved, channelled, acute; flower-stem, slender, straight, a foot, or more high; raceme, pretty dense (containing from twenty to sixty flowers) when in full bloom, from 1 to 2 inches long, and 5 or 6 lines broad; pedicels, ascending for some time, 1½ to 2 lines long, the lower one frequently in pairs; bracts, minute, whitish, lance-shaped, deltoid; perianth, 1 line long, rosy-purple; filaments, a little shorter than the segments; style, thread-like, scarcely ¼ line long; ovule, solitary in each cell; racemes of fruit, 4 to 6 inches long; capsule, top-shaped, 1½ to 2 lines long. Native of China, from Peking and Macao and Hong-Kong.

2. S. japonica (Baker).—Bulb, ovoid, 9 to 12 lines in diameter; leaves, two or three in number, produced along with the flowers, fleshy-herbaceous, 6 to 12 inches long, 4 to 6 lines broad, acute, gradually narrowed in the lower half; flower-stems, slender, straight, 1 to 3 feet, or more, in length; raceme, somewhat loose (containing from twenty to sixty flowers or more), 4 to 8 inches long, and an inch broad when in fruit; pedicels, ascending for some time, 5 or 6 lines long when bearing fruit; bracts, minute, linear, whitish; perianth, 1½ lines long, rosy-purple; filaments, flattened at the base, a little shorter than the segments; style, ½ inch long; ovules, one in each cell; capsule, top-shaped, 2½ to 3 lines long. Native of Japan and the Loo Choo Islands.

3. S. numidica (Poir. It. Barb.).—Bulb, ovoid, 1 to 2 inches in diameter; leaves, four to six in number, fleshy-herbaceous, linear, 6 to 8 inches long, 1½ to 3 lines broad, nearly erect; flower-stems, solitary or in pairs, 6 inches to 1 foot high, straight; racemes, somewhat dense (containing from thirty to sixty flowers), 2 or 3 inches long, and 1 inch across when in fruit; pedicels, 3 to 5 lines long, ascending for some time; bracts, very small, linear, evanescent; perianth, rosy-purple, 1½ inches long; filaments, a little longer than the segments, flattened at the base; ovules, solitary in each cell; capsule, 1½ lines long, globose, deep three-furrowed. Native of Algeria.

4. S. autumnalis (Linn.).—Bulb, ovoid, 6 to 12 lines in diameter; leaves, five or six in number, appearing soon after the flowers, fleshy-herbaceous, almost cylindrical, channelled, 4 to 6 inches long, and ½ line across; flower-stems, one to three in number, flexuose, 2 to 6 inches high; racemes (containing from six to twenty flowers), 1½ to 2 inches long, and 6 to 10 lines across when fully expanded; pedicels, ascending for some time, the lowest ones 2 to 4 lines long; bracts, obsolete; perianth, rosy-lilac, 1½ to 2 lines long; filaments, flattened, about half the length of the segments; ovules, in pairs in each cell; capsule, globose, 1½ lines long, deeply three-furrowed; seeds, black. Native of England, and extending to Tauria, Algeria, and Syria. *S. dumetorum* (Balansa) is a variety in which the leaves begin to appear after the bursting of the capsule. *S. racemosa* (Balansa) is a stout variety, with a larger bulb and buff-coloured seeds. *S. pulchella* (Munby) is an Algerine variety, with very slender leaves appearing soon after the flowers, and about as long as the flower-stem; raceme, containing six to eight flowers, scarcely more than half-an-inch broad when in fruit; perianth, smaller and more bell-shaped.

5. S. obtusifolia (Poiret, It.).—Bulb, ovoid, 12 to 18 lines in diameter; leaves, three to four in number, appearing after the flowers, somewhat leathery, smooth, distinctly many-nerved, tongue-like lance-shaped, 3 or 4 inches long, 6 to 12 lines broad, acute, thickened at the margin; flower-stems, one to four in number, flexuose, 6 to 12 inches long, reddish at the base, frequently downy; raceme, somewhat dense (containing from twenty to sixty flowers), 2 or 3 inches long, and 9 or 10 lines broad when in fruit; pedicels, ascending for some time, the lowest ones 3 or 4 lines long; bracts, obsolete; perianth, rosy-lilac, 1½ to 2 lines long; filaments, flattened

at the base, a little shorter than the segments; ovules, in pairs in each cell; capsule, $1\frac{1}{2}$ lines long, globose, three-furrowed; seeds, black. Native of Algeria. A more slender variety, *S. o. intermedia* (Baker), is found in Sardinia and Corsica. It has a smaller bulb; leaves, 15 to 18 lines long and 3 or 4 lines broad; and a loose raceme of from six to fifteen flowers. Another variety, *S. o. fallax* (Baker), intermediate between *S. obtusifolia* and *S. autumnalis*, resembles the type in its height and bulb, but has longer and narrower leaves (5 to 6 lines long, and $1\frac{1}{2}$ to 2 lines broad). Native of Algeria and Morocco.

6. *S. Hanburii* (Baker).—Bulb, ovoid, 1 inch in diameter; leaves, produced after the raceme (I have not seen full-grown ones), narrowly-linear, fleshy-herbaceous; flower-stem, straight, 3 to 5 inches long; raceme, loose, 2 or 3 inches in length and breadth, containing from fifteen to twenty-five flowers; bracts, obsolete; lowest pedicels, ultimately straight, patent, 12 to 21 lines long; upper ones, ascending; perianth, 2 lines long, with narrowly strap-shaped segments, half a line broad; filaments, a little shorter than the segments; ovules, in pairs in each cell; capsule, 2 lines long, obovoid, three-furrowed, obtuse; style, thread-like, half-an-inch long. Found on Anti-Libanus at an altitude of 4,000 feet.

7. *S. latifolia* (Willd.).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter; leaves, six to nine in number, sheathing the base of the flower-stem for some distance, lance-shaped, slightly fleshy-herbaceous, 12 to 15 inches long, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches broad in the middle, gradually narrowed at the base and apex, smooth on the margin, with very many slender sunken veins; flower-stem, straight, a foot or more high; raceme, dense (containing from thirty to sixty flowers), 3 or 4 inches long, and 12 to 15 lines across, when fully expanded; lowest pedicels, somewhat patent, 5 to 7 lines long; bracts, very small, linear awl-shaped; perianth, lilac, bell-shaped, $1\frac{1}{2}$ lines long, with strap-shaped segments half a line broad; ovules, in pairs in each cell; filaments, a little shorter than the segments. I have not seen the capsule. Native of the Canary Islands and Madeira. *S. lusitanica* (Sims. Bot. Mag. t. 1999, non Linn.) is, probably, a robust garden variety of this species.

8. *S. hæmorrhoidalis* (Webb).—Bulb, ovoid, 12 to 15 lines in diameter, with numerous tawny membranous coats; leaves, two or three in number, produced along with the flowers, thong-like, slightly fleshy-herbaceous, 6 to 12 inches long, 6 to 15 lines broad, narrowed abruptly at the apex, and for a considerable length at the base, smooth at the margin, and with slender sunken veins; flower-stem, 4 to 9 inches long; raceme (containing from twenty to fifty flowers), 4 to 8 inches long, and 8 to 12 lines broad, when fully expanded; bracts, linear awl-shaped, 1 to $1\frac{1}{2}$ lines long; pedicels, erect-patent, the lowest ones 2 or 3 lines long; perianth, lilac, bell-shaped, $1\frac{1}{2}$ lines long, with strap-shaped segments downy at the apex; filaments, scarcely 1 line long; ovules, two in each cell; capsule, 2 lines long, depressed-globose, obtusely triangular. Native of the Canary Islands.

9. *S. Bertheloti* (Webb).—Bulb, of a long ovoid shape, 6 to 9 lines in diameter; leaves, five or six in number, produced together with the flowers, slightly fleshy-herbaceous, patent, thong-like, 6 to 12 inches long, and 6 to 9 lines broad in the middle, narrowed abruptly at the apex and for some length at the base, and marked with slender sunken veins; flower-stems, slender, 6 to 8 inches high; racemes (containing twelve to twenty flowers each), when fully expanded, 1 to 2 inches long, and 5 or 6 lines across; bracts, awl-shaped, 1 line long; pedicels, ascending, as long as the bracts; perianth, bell-shaped, pale lilac, 1 line long, with ligulate lance-shaped segments; filaments, a little shorter than the segments; ovules, 2 in each cell, collateral; style, thread-like, as long as the ovary; capsule, globose, obtusely three-angled. Canary Islands and Western Guinea. Flowered in Kew Gardens in 1860.

10. *S. messeniaca* (Boiss.).—Bulb, ovoid, with pale coats; leaves, five to seven in number, thong-like, 12 to 18 inches long, 4 to 10 lines broad, with from twenty-four to thirty-six nerves, narrowed abruptly at the apex, and for some length at the base; flower-stem, slender, about as long as the leaves; raceme, ovate-oblong, containing from seven to twelve flowers; bracts, linear, solitary, very minute; pedicels, erect-patent, half as long again as the flowers; segments of the perianth, linear, obtuse, of a pale azure colour, marked with a deeper line in the middle; filaments, sky-blue, flattened at the base; ovules, in pairs in each cell; style, as long as the ovary. Greece, Peloponnesus.

11. *S. pratensis* (Lindl. "Bot. Reg." 1839, t. 63).—Bulb, ovoid, 9 to 12 lines in diameter; leaves, three to six in number, produced along with the flowers, fleshy-herbaceous, smooth, narrowly-strap-shaped, 6 to 12 inches long, 2 to 4 lines broad, with from ten to twenty sunken veins, and gradually from the middle towards the apex and base; raceme, dense (containing from twelve to thirty flowers) when fully expanded, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, and from 15 to 18 lines

across; bracts, very small, deltoid, solitary; pedicels, 4 to 6 lines long, ascending or somewhat patent; perianth, bell-shaped, $1\frac{1}{2}$ to 2 lines long, of a deep sky-blue colour, with segments $\frac{1}{2}$ inch wide; filaments, 1 to $1\frac{1}{2}$ lines long, flattened in the upper part; ovules, in pairs in each cell; capsule, globose. Croatia, Bosnia, Dalmatia.

12. *S. Gerrardi* (Baker).—Bulb, ovoid, 8 or 9 lines in diameter, crowned with numerous brownish bristly fibres; leaves three or four in number, produced along with the flowers, linear, ascending, 3 to 5 inches long, 1 to $1\frac{1}{2}$ lines broad, covered everywhere with a grey pubescence, stiff and leathery, persistent, thickened at the margin, and marked on the upper surface with five or six raised nerves, which stand out in bold relief; flower-stem, pubescent, straight, 4 to 6 inches long; raceme, somewhat dense (containing from twenty to thirty flowers), when fully expanded, 2 or 3 inches long, and 18 to 21 lines across; bracts, solitary, linear-awl-shaped, $1\frac{1}{2}$ to 2 lines long; pedicels, ascending, stout, 6 to 9 lines long; perianth, white, $1\frac{1}{2}$ lines long, with bluntish segments half-a-line broad, and slightly hooded at the apex; filaments 1 line long, linear at the base; capsule, of a depressed globose shape, deeply three-angled, 1 line long; seeds, solitary in each cell. Natal and British Caffraria.

13. *S. firmifolia* (Baker).—Bulb, ovoid, 12 to 15 lines in diameter; leaves, produced along with the flowers, three or four in number, stiff and leathery, smooth, nearly erect, linear, 5 or 6 inches long, $1\frac{1}{2}$ to 2 inches broad, convex on the back, channelled on the upper surface, and marked with very prominent veins standing out in relief; flower-stems, firm, 5 or 6 inches high; racemes, somewhat dense (each containing from thirty to fifty flowers), when expanded, of a cylindrical lance-shape, 3 or 4 inches long, and 6 or 7 lines across; bracts, linear, lance-shaped, $\frac{1}{2}$ to 1 line long, the lowest ones $1\frac{1}{2}$ to 2 lines long; pedicels, ascending, the lower ones $1\frac{1}{2}$ to 2 lines long; perianth, roundish-bell-shaped, of a deep rosy-purple colour, $1\frac{1}{2}$ lines long, with lance-shaped segments, $\frac{1}{2}$ line across; ovules, two in each cell; filaments, 1 line long, lance-shaped at the base. Cape of Good Hope.

14. *S. hyacinthoides* (Linn.).—Bulbs, large, gregarious, ovoid, $1\frac{1}{2}$ to 2 inches in diameter; leaves, ten to twelve in number, produced along with the flowers, fleshy-herbaceous, patent, 12 to 18 inches long, 6 to 15 lines broad, narrowed, abruptly at the apex, and for some distance at the base, minutely toothed at the margin; flower-stem, straight, 1 to 2 feet, or more, high; raceme (containing from fifty to 150 flowers), when fully expanded, 6 to 18 inches long, and 2 to $2\frac{1}{2}$ inches across; bracts, small, deltoid, whitish, persistent; pedicels, erect-patent, the lower ones 12 to 15 inches long; perianth, of a deep lilac-blue, 2 to $2\frac{1}{2}$ lines long, with strap-shaped segments, downy at the apex; filaments, $1\frac{1}{2}$ to 2 lines long, flattened in the upper part; ovules, collateral, in pairs in each cell; style, thread-like, $1\frac{1}{2}$ inches long; capsule, globose. Portugal; thence through the Mediterranean region, to Syria.

15. *S. Lilio-hyacinthus* (Linn.).—Bulb, ovoid, 15 to 18 lines in diameter, covered with broad, ovate, lilac-coloured scales; leaves, four to six in number, produced along with the flowers, fleshy-herbaceous, flaccid, smooth, sheathing the flower-stem for a considerable length at the base, 6 to 12 inches long, 8 to 12 lines broad, narrowed abruptly at the apex, and gradually in the upper part; flower-stem, slender, 6 to 12 inches long; racemes (containing from six to eighteen flowers), 2 or 3 inches long, and from 15 to 18 lines broad when fully expanded; pedicels, erect-patent, the lowest ones from 6 to 12 lines long; bracts, linear, solitary, persistent, 6 to 9 lines long; perianth, bell-shaped, of a deep blue colour, 4 or 5 lines long, with lance-shaped segments, 1 to $1\frac{1}{2}$ lines across; ovules, in pairs in each cell; filaments, $2\frac{1}{2}$ to 3 lines long; style, 2 lines long; capsule of a depressed-globose shape, obtusely three-angled, 4 lines in length and width. Central and Southern France, and the north of Spain.

16. *S. Aristidis* (Cosson).—Bulb, ovoid, 5 or 6 lines in diameter; leaves, two or three in number, produced along with the flowers, fleshy-herbaceous, smooth, lance-shaped, acute, 5 or 6 inches long, 4 to 6 lines broad, embracing the base of the flower-stem, which is solitary, and a little longer than the leaves; raceme, dense (containing from ten to twelve flowers), and, when fully expanded, 12 to 15 lines long and 5 or 6 lines across; bracts, in pairs, linear, whitish, 3 or 4 lines long; pedicels, ascending, the lowest ones 2 or 3 lines long; perianth, $2\frac{1}{2}$ to 3 lines long, with segments scarcely a line wide; filaments, $1\frac{1}{2}$ lines long; ovules, in pairs in each cell; style, 1 line long. Algeria. This species has quite the habit of *S. lingulata*; but is easily distinguished from it by its fewer leaves, and its ovules being in pairs.

17. *S. italica* (Linn.).—Bulb, ovoid, 6 to 9 lines in diameter; leaves, four to six in number, thong-like, fleshy-herbaceous, flaccid, patent, sharply keeled, 4 to 8 inches long, 3 to 6 lines broad, narrowed abruptly at the apex, and gradually on the upper part; flower-stems, solitary, slender, 6 to 10 inches high; racemes, dense (containing from six to thirty flowers), at first conical in shape,

when fully expanded, 1 or 2 inches long, and 9 to 12 lines broad; bracts, in pairs, linear, 4 to 6 lines long; pedicels, erect-patent, the lowest ones 3 to 6 lines long; perianth, of a deep blue colour, and with a Willow-like odour, $2\frac{1}{2}$ to 3 lines long, with segments half-a-line broad, and downy at the apex; filaments, $1\frac{1}{2}$ to 2 lines long, narrowly wedge-shaped at the base; ovules, two in each cell; capsule, globose, obtusely three-angled. Italy, Switzerland, Baden, and Southern France. *S. purpurea* (Mill.) is a robust garden form, with deeper coloured flowers.

18. *S. sibirica* (Andrews).—Bulb, globose, 6 to 15 lines in diameter; leaves, two to four in number, produced along with the flowers, fleshy-herbaceous, ascending, thong-like, when fully grown, 4 to 6 inches long and 4 to 6 lines broad, narrowed abruptly at the apex, slightly hooded, gradually narrowed in the upper part, and with twelve to twenty sunken veins; flower-stems, one to six in number, fleshy, 3 to 6 inches high; flowers, one to three on each stem, horizontal, or slightly nodding, lateral, on short stalks; bracts, small, deltoid; perianth, of a brilliant porcelain-blue colour, 6 or 7 lines long, with segments $1\frac{1}{2}$ to 2 lines broad, ascending in the fully expanded flower, and of a deeper colour on the back; filaments, 3 to $3\frac{1}{2}$ lines long, flattened at the base; ovules, eight to ten in each cell; style, $1\frac{1}{2}$ to 2 lines long. Southern and Central European Russia, thence extending to Armenia, Georgia, and Kurdistan.

19. *S. bifolia* (Linn.).—Bulb, ovoid, 6 to 9 lines in diameter; leaves, produced along with the flowers, most usually in an opposite pair, embracing the base of the flower-stem for some length, fleshy-herbaceous, hooded and narrowed abruptly at the apex, and gradually on the upper part, when fully grown, 4 to 8 inches long, and 4 to 6 lines across, concave on the upper surface; flower-stems, solitary, 3 to 6 inches long; racemes, deltoid, containing each three to eight flowers, and, when, fully expanded, 1 to $1\frac{1}{2}$ inches broad; pedicels, ascending, the lowest ones 6 to 12 lines long; bracts, small, deltoid, sometimes obsolete; perianth, of a deep brilliant blue, sometimes reddish or whitish, 4 or 5 lines long, with segments 1 to $1\frac{1}{4}$ lines broad, patent in the fully-expanded flower; filaments, $2\frac{1}{2}$ to 3 lines long, flattened at the base; ovules, five or six in each cell; style, 1 line long; capsule, globose, 3 or 4 lines in length and breadth, obtusely three-angled; seeds, two to four in each cell, of a tawny colour, and furnished at the base with a whitish fleshy arillus. Spain and France, and thence extending to Asia Minor and Georgia. *S. Kladnii* (Schur.) is a small, decumbent, few-flowered, Alpine, bifoliate form.

Var. *s. b. præcox* (Masters).—A more robust form, with an ovoid bulb 1 inch in diameter, and bearing ten to fifteen flowers, a little larger and blooming earlier; the leaves are thicker and broader, and the lowest pedicels are from 1 to $1\frac{1}{2}$ inches long. Native of Austria. *S. rosea* (Lehm.) is a form of this variety with reddish flowers. *S. b. var. taurica* (Regel) is a Taurian form, usually producing three or four leaves.

Var. *s. b. nivalis* (Baker).—A more slender variety, from the mountains of Greece and Asia Minor, with two leaves, 2 to 3 lines broad, and two to five flowers, with smaller segments, which are scarcely more than 3 lines long. *S. laxa* and *S. subtriphylla* (Schur.) are allied forms, from the mountains of Transylvania, with usually from three to five leaves.

20. *S. amœna* (Linn.).—Bulb, sub-globose, 6 to 9 lines in diameter; leaves, four to five in number, produced along with the flowers, fleshy-herbaceous, flaccid, thong-like, embracing the base of the flower-stem, ascending, smooth, 6 to 9 inches long, and 4 to 8 lines broad, narrowed abruptly at the apex and for some distance in the upper part, and marked with from twenty to thirty slender sunken veins; flower-stems, weak, 4 to 6 inches high; raceme, loose, containing three to six flowers, and, when fully expanded, from 6 to 9 lines long; bracts, small, deltoid; pedicels, ascending, the lowest ones 6 to 9 lines long; perianth, 5 to 6 lines long, of a deep blue colour (rarely whitish), and with lance-shaped segments, 1 to $1\frac{1}{2}$ lines broad; filaments, 3 lines long, flattened at the base; ovules, six to eight in each cell; style, blue, $1\frac{1}{2}$ to 2 lines long; capsule, sub-globose, obtusely three-angled, and with not very deep furrows. Austria, Germany, and Northern Italy.

Var. *S. a. bithynica* (Baker).—A more slender form, with leaves 3 or 4 lines broad, and marked with ten to fifteen nerves; perianth, 3 lines long. Mountains of Asia Minor.

21. *S. peruviana* (Linn.) (*Calosilla hipponensis*, &c., Jourd. et Fourr.).—Bulb, ovoid, 2 or 3 inches in diameter, with numerous coats; leaves, six to nine in number, produced along with the flowers, thong-like, fleshy-herbaceous, 6 to 12 inches long, and 8 to 12 lines broad, narrowed from the middle towards the base and apex, and fringed on the margin with dense small whitish bristles; flower-stem, stout, striated, 6 to 12 inches high; raceme, very dense, containing from fifty to a hundred flowers, or more, and, at first, of a deltoid shape; when fully expanded, 4 to 6 inches in length and breadth; bracts,

linear, whitish, persistent, solitary, 1 to 2 inches long, very conspicuous before the flowering begins; lowest pedicels, sub-patent, 2 or 3 inches long; perianth, 5 to 6 lines long, lilac, reddish, or whitish, with lance-shaped segments, channelled with green, and $1\frac{1}{2}$ to 2 lines broad; ovules, four to six in each cell; filaments, lance-shaped, 3 to 4 lines long; capsule, top-shaped. Sardinia, Corsica, Sicily, Italy, and Algeria. *Calosilla hipponensis*, subcarnea, and elegans (Jourd. et Fourr.), are Algerian forms with reddish flowers; and *C. pallidiflora*, flaveola, and subalbida, are forms with whitish flowers.

Var. *S. p. glabra* (Boiss.).—Leaves, smooth on the margin; lower pedicels, $1\frac{1}{2}$ to 2 inches long; perianth, of a deep lilac colour. Spain, Portugal, and Mauritania. *Scilla Hughii*, from the island of Maretti, near Sicily, is a more robust form, with the flower-stem, pedicels, and bracts tinged with red, and leaves from $1\frac{1}{2}$ to 2 inches broad.

22. *S. Cupani* (Guss. Prodr.).—Bulb, ovoid, from 9 to 12 lines in diameter; leaves, six to eight in number, produced along with the flowers, thong-like, lance-shaped, fleshy-herbaceous, patent, 3 to 4 inches long, 6 to 8 lines broad in the middle, transparent at the margin and minutely ciliated; flower-stem, slender, flexuose 3 to 6 inches high; raceme, loose, containing six to twelve flowers, sub-corymbose or deltoid in shape, and, when fully expanded, $1\frac{1}{2}$ to 2 inches in length and breadth; bracts, whitish, slightly fringed, lance-shaped, solitary, acuminate, 6 to 9 lines long; pedicels, ascending, the lowest ones 1 to 2 inches long; perianth, of a deep blue colour, 3 lines long, with oblong-obtuse segments, 1 line broad; filaments, $1\frac{1}{2}$ lines long, flattened at the base; ovules, few, placed over each other; capsule, obovoid, obtusely three-angled. Sicily.

23. *S. villosa* (Desf.).—Bulb, ovoid, 8 to 9 lines in diameter; leaves, three or four in number, produced along with the flowers, thong-like, fleshy-herbaceous, patent, 3 to 5 inches long, 3 to 6 lines broad, ciliated, slightly hairy on the upper surface, and channelled; flower-stem, 2 or 3 inches high; raceme, sub-corymbose, and containing from six to eight flowers; bracts, solitary, linear, persistent, 6 to 9 lines long; pedicels, erect-patent, the lowest ones 9 to 15 lines long; perianth, of a deep blue colour, 4 to $4\frac{1}{2}$ lines long, with elliptical bluntish segments, $1\frac{1}{2}$ lines broad; filaments, $2\frac{1}{2}$ to 3 lines long; ovules, four or five in each cell. Barbary.

24. *S. verna* (Huds. Fl. Angl.).—Bulb, ovoid, 6 to 9 lines in diameter; leaves, four to six in number, fleshy-herbaceous, flaccid, produced along with the flowers, patent, smooth, linear, 3 to 8 inches long, 1 to $1\frac{1}{2}$ lines broad, sub-obtuse, gradually narrowed downwards; flower-stem, slender, 3 to 6 inches high; raceme, sub-corymbose or deltoid, containing from six to twelve flowers, and, when fully expanded, 9 to 18 lines across; bracts, solitary, linear, whitish, 3 to 6 lines long; pedicels, erect-patent, the lowest ones from 6 to 12 lines long; perianth, bell-shaped, of a deep blue colour, $2\frac{1}{2}$ to 3 lines long, with lance-shaped segments, 1 to $1\frac{1}{2}$ lines broad; ovules, four to six in each cell; filaments, lance-shaped, 2 lines long; capsule, globose, top-shaped, $2\frac{1}{2}$ to 3 lines in length and breadth. Native of the British Islands, and distributed northwards to the Faroe Islands, and southward through France to the North of Spain. A variety, *S. v. Ramburei* (Baker), is of more robust growth, with leaves 2 or 3 lines broad, and bears from twelve to twenty flowers, disposed in large racemes. Spain and Portugal.

25. *S. monophylla* (Link in "Schröd. Journ.," 1799).—Bulb, globose, 6 to 9 lines in diameter; leaf, usually solitary, sheathing the base of the flower-stem for some distance, ascending, thong-like, fleshy-herbaceous, 6 to 9 inches long, 6 to 8 lines broad in the middle, and gradually narrowed towards the acute apex; flower-stem, slender, 6 to 12 inches high; racemes, loose, containing from five to twenty flowers each, and, when fully expanded, 2 or 3 inches long, acuminate, solitary, whitish; pedicels, ascending, the lowest ones from 6 to 12 lines long; perianth, bell-shaped, 3 or 4 lines long, with segments from 1 to $1\frac{1}{2}$ lines broad; ovules, four to six in each cell; filaments, 2 to 2½ lines long, flattened at the base; capsule, globose, top-shaped, obtusely triangular, 4 lines in length and breadth. Spain, Portugal, and Morocco.

26. *S. odorata* (Hoffm. et Link.).—Bulb, ovoid, 6 to 9 lines in diameter; leaves, three or four in number, produced along with the flowers, smooth, 6 to 9 inches long, 3 or 4 lines broad, sub-obtuse, channelled on the upper surface, narrowed downwards for a considerable length; flower-stem, slender, flexuose, 3 to 6 inches high; racemes, loose, containing from six to twenty flowers each, and, when fully expanded, from 1 to $2\frac{1}{2}$ inches long, solitary, deltoid at the base; pedicels, ascending, the lowest ones 4 to 6 lines long; perianth, bell-shaped, fragrant, of a deep blue colour, 4 to $4\frac{1}{2}$ lines long, with oblong segments, $1\frac{1}{2}$ lines broad; ovules, five or six in each cell; filaments, 3 lines long, flattened at the base; capsule, globose, obtusely three-angled. Spain and Portugal.

27. *S. rigidifolia* (Kunth, "Enum." iv. 330).—Bulb, ovoid, 1 or 2 inches in diameter, crowned with numerous persistent fibrous

bristles; leaves, five or six in number, produced along with the flowers, stiff and leathery, ascending, thong-like lance-shaped, undulated, smooth, with thickened edges and very prominent veins, 8 to 12 inches long, 6 to 12 lines broad in the middle, gradually narrowed towards the pointed apex; flower-stem, straight, 6 to 12 inches high; raceme, dense (containing thirty to a hundred flowers, or more), conical at first, and, when fully expanded, 3 to 6 inches long, and 1½ to 2 inches broad; bracts, linear, 2 or 3 lines long; pedicels, stout, ascending, the lower ones 9 to 18 lines long; perianth, whitish, bell-shaped, 1½ to 2 lines long, with oblong, slightly hooded segments half a line broad; filaments, 1 to 1½ lines long, hardly flattened; ovules, six to eight in each cell; ovary, globose, shortly stalked; styles as long as the ovary. Cape of Good Hope, Natal, the Transvaal territory, and Basuto land, and on the banks of the river Aapages. A variety, *S. r. nervosa* (Baker), is a taller and more robust grower, with an ovoid raceme, which, when fully expanded, is 7 or 8 inches long, and 4 or 5 inches broad, with straight, horizontally patent pedicels, 2 to 2½ inches long. Cape of Good Hope. Grown in Kew Garden in 1858.

28. *S. Kraussii* (Baker).—Bulb, elongated ovoid, 9 to 12 lines in diameter, devoid of bristles on the crown; leaves, three or four in number, produced along with the flowers, stiff and leathery, densely pubescent on both sides, undulated, lance-shaped, 1½ to 2 inches long, 5 or 6 lines broad, with thickened edges and prominent veins; flower-stem, firm, 6 to 8 inches high; raceme, dense (containing from twenty to fifty flowers), 1½ to 3 inches long, and about an inch in diameter; bracts, solitary, linear awl-shaped, 3 or 4 lines long; pedicels, slender, ascending, lower ones 4 to 6 lines long; perianth, bell-shaped, blue, 1½ to 2 inches, with bluntish lance-shaped segments, three-quarters of a line broad; ovary, globose, very shortly stalked; ovules, few, arranged over each other in each cell; style, thread-like, as long as the ovary; filaments, 1 line long, flattened at the base. Natal.

29. *S. natalensis* (Planch. in "Bot. Mag." t. 5,379).—Bulb, ovoid, 3 or 4 inches in diameter, with scaly coats at the crown, but no fibres; leaves, four to six in number, fleshy-herbaceous, produced along with the flowers, thong-like, lance-shaped, of a deep green colour, smooth, 9 to 12 inches long, 3 or 4 inches broad, ascending, gradually narrowed towards the pointed apex; flower-stem, stout, erect, tapering, 1 to 1½ feet high, and 4 to 6 lines in diameter; raceme, dense, containing from 50 to 100 flowers or more, and when fully expanded, 6 to 12 inches long and 2½ to 3 inches in diameter; pedicels, ascending, the lower ones from 9 to 12 lines long; bracts, solitary, linear-awl-shaped, 9 to 12 lines long; perianth, deep blue, 3 or 4 lines long, with spreading star-like segments, 1 to 1½ lines broad; filaments, linear, 2 to 2½ lines long; ovary, globose, shortly stalked; ovules, ten to twelve in each cell; style, thread-like, 1 line long. Natal. It has been grown in Kew Gardens, together with its variety, *S. N. sordida* (Baker), which is smaller, and has brownish-tinged, fewer, and smaller leaves, 7 or 8 inches long, and 15 to 18 lines broad, a more slender flower-stem, and perianth 2½ to 3 lines in length.

30. *S. versicolor* (Baker).—Bulb, ovoid, 1 to 1½ inches in diameter, tunicated at the crown; leaves, six to eight in number, produced along with the flowers, fleshy-herbaceous, smooth, ascending, linear-thong-like, 6 to 9 inches long, 4 to 6 lines broad, green on both sides, and gradually narrowed towards the acute apex; flower-stem, erect, 6 to 8 inches high; raceme, somewhat dense, containing from fifty to eighty flowers, and when fully expanded 6 to 8 inches long, and 3½ inches across, with a thickened rachis; bracts, solitary, linear, 2 or 3 lines long; lower pedicels eventually patent, 1½ to 2 inches long; perianth, 2 to 2½ lines long, whitish tinged with green, and with bluntish strap-shaped segments half line broad; filaments, 1½ to 2 lines long, slightly flattened; anthers, blue; ovules, five or six in each cell; ovary, globose, blue, very shortly stalked; style as long as the ovary.—Cape of Good Hope. Has been grown in Mr. Wilson Saunders's garden.

31. *S. pallidiflora* (Baker).—Bulb, ovoid, 3 or 4 inches in diameter, the outer coats devoid of fibrous bristles at the apex; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, thong-like, lance-shaped, ascending, 12 to 15 inches long, 12 to 15 lines broad, smooth, green, with sunken veins; flower-stem, stout, erect, 1½ feet or more high; raceme, dense, containing from 100 to 150 flowers or more, conical at first, and, when fully expanded, 6 to 10 inches long, and 3 inches in diameter; bracts, solitary, linear, small; pedicels, straight, the lower ones horizontally patent, 12 to 15 lines long; perianth, bell-shaped, whitish tinged with green, and with bluntish oblong segments; filaments, thread-like, 1½ lines long; ovary, globose, very shortly-stalked; ovules, numerous, arranged over each other in the cell; style, nearly as long as the ovary.—Cape of Good Hope.

32. *S. Hohenackeri* (Fisch. et Mey.).—Bulb, ovoid, 6 to 12 lines

in diameter; leaves, 4 to 6 in number, produced along with the flowers, fleshy-herbaceous, flaccid, smooth, narrowly thong-like, 8 to 12 inches long, 1½ to 3 lines broad, narrowed abruptly at the apex, and thence gradually downwards; flower-stems, one or two in number, slender, 4 to 8 inches high; racemes, loose, containing from six to fifteen flowers each, and when fully expanded, 2 or 3 inches long, and 15 to 18 lines broad; bracts, in pairs, whitish, membranous, truncate, half a line long, spurred at the base; pedicels, sub-patent, or nodding, the lowest ones 5 or 6 lines long; perianth, blue, 5 or 6 lines long, with strap-shaped segments, 1½ lines broad, bluntish and slightly hooded at the apex; filaments, thread-like, 3 or 4 lines long; ovary, globose, very shortly stalked; style, thread-like, 2 lines long; capsule, sub-globose, 3 lines long; seeds, three or four in each cell.—Caucasus, Afghanistan, and the East Indies.

33. *S. vincentina* (Hoffm et Link).—Bulb, sub-globose, 6 to 9 lines in diameter, leaves three or four in number, fleshy-herbaceous, flaccid, smooth, linear, sheathing the base of the flower-stem, ascending, 4 to 8 inches long, 2 or 3 lines broad, gradually narrowed towards the pointed apex; flower-stem, slender, 4 to 6 inches high; racemes, sub-corymbose, each containing from six to eighteen flowers; bracts, linear, in pairs, the lower ones 6 to 9 lines long; pedicels, ascending, the lowest ones 6 to 9 lines long; perianth, bell-shaped, deep blue, 2½ to 3 lines long, with lance-shaped segments 1 line broad, filaments, lance-shaped, 1½ to 2 lines long; ovules, 2 or 3 in each cell.—Portugal and Morocco. This species has quite the habit of *S. verna*, but is distinguished by having the bracts in pairs, and by the different shape of the leaves.

34. *S. lingulata* (Poiret).—Bulb, ovoid, 6 to 8 lines in diameter; leaves, six to eight in number, produced along with the flowers, fleshy-herbaceous, smooth, ascending, tongue-shaped, thong-like, embracing the base of the flower-stem, 2 or 3 inches long, 4 to 6 lines broad, narrowed abruptly at the apex, and thence gradually downwards; flower-stem, 2 to 4 inches high; raceme, oblong, somewhat dense, containing from six to fifteen flowers, and, when fully expanded, 12 to 18 lines long, and 6 to 9 lines in diameter; bracts, linear, in pairs, 6 to 9 lines long; pedicels, erect-patent, the lowest ones 2 or 3 lines long; perianth, bell-shaped, 2½ to 3 lines long, with bluntish strap-shaped segments ¾ to 1 line broad; ovules, three or four in each cell; filaments, 1½ to 2 lines long; capsule, globose-top-shaped, 2 to 2½ lines in length and breadth.—Algeria and Morocco.

Doubtful Species of this Sub-genus.

35. *S. lusitanica* (Linn.).—Leaves, fleshy-herbaceous, thong-like, 5 or 6 inches long, 6 or 7 lines broad, smooth, flaccid; flower-stem, 4 or 5 inches high; raceme, 2 or 3 inches long, 15 to 18 lines broad, and containing from twenty to thirty flowers; bracts, solitary, linear, membranous, whitish, 1½ to 2 lines long; pedicels, ascending, the lower ones 9 to 12 lines long; perianth, whitish, 3 lines long, with lance-shaped segments more than a line across; stamens, lance-shaped, 1½ lines long.—Portugal, on the authority of Linnæus. I have examined the original specimen from the garden at Upsal, in the herbarium of Linnæus, but have seen no ovules. The plant appears to approach *S. italica* in habit, but differs in having shorter and solitary bracts, and broader leaves, &c.

36. *S. plumbea* (Lindl.).—Bulbs, gregarious, ovoid, 2 or 3 inches in diameter; leaves, fleshy-herbaceous, produced along with the flowers, thong-like, lance-shaped, about 1 foot long, and 15 lines broad, not spotted, acute, smooth; raceme, containing from fifteen to twenty flowers, and, when fully expanded, 3 to 3½ inches long, and 18 to 21 lines broad; bracts, linear, 2 or 3 lines long; lowest pedicels sub-patent, 6 to 8 lines long; perianth of a dull blue colour, bell-shaped, 3 to 3½ lines long. Cape of Good Hope. I have not seen the plant, and the above description is that of a specimen grown in Kew Gardens in 1813. It appears to approach closely to *S. natalensis*, and I am in doubt if it is not the same.

37. *S. flexuosa* (Baker).—Leaves, produced along with the flowers, smooth, fleshy-herbaceous, attaining the length of 1 foot and 1 line broad, flexuose, sheathing the base of the flower-stem for a considerable length; flower-stem, flexuose, slender, 6 inches high; raceme, containing from ten to twelve flowers, and when fully expanded, 15 to 18 lines long, and 1 inch in diameter; bracts, lance-shaped, membranous, persistent, as long as the pedicels; pedicels, slender, flexuose, the lower ones 4 or 5 lines long; perianth, bell-shaped, 2½ lines long, with lance-shaped segments, three-quarters of a line broad; stamens a little shorter than the segments. Cape of Good Hope.

[The foregoing descriptive enumeration of Squills, translated for THE GARDEN, forms the first part of Mr. Baker's excellent paper on that genus, printed in a late number of the *Linnean Society's Journal*. The remainder of the article we hope to publish next week.—Ed.]

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

LET every effort be used to render the flower garden as interesting and attractive as possible; let beds of Verbenas and Calceolarias still be well supplied with water while the weather continues dry, or the former will become the prey of red spider, while the latter will be not unlikely to die off altogether. Zonal Pelargoniums, when fairly established, will continue healthy and will flower well with a somewhat restricted supply of moisture; the tricolor sorts, which are generally grown for the beauty of their foliage only, should be divested of their blooms before they expand, and should be encouraged by every possible means to grow freely. Continue to thin, stake, and tie up the shoots of Dahlias and other tall-growing herbaceous plants wherever this is required; also remove decayed leaves and flower-stems as soon as the flowering period is over; and it is very likely that many species of Larkspur and other hardy plants will, this season, flower freely for the second time in the course of the autumn. Many annual flowers have been of short duration this year; they should, however, be cleared off as soon as they are out of bloom, unless seed is required, and this should never be saved promiscuously, or the "strain" will gradually deteriorate, as it generally happens that the worst flowers are the most productive of seed. If new and distinct varieties are desired recourse must be had to artificial fertilisation; but if improvement of strain is merely what is sought for, that can, with more or less certainty, be secured by judicious selection, a practice which should be invariably pursued with annual flowers generally, and more particularly with such plants as the various sorts of Stocks and Wallflowers, Mignonette, Anemones, Columbines, Antirrhinums, Pinks, Larkspurs, Helichrysums, Phlox Drummondii, &c., as, by this means, annual flowers, as well as culinary vegetables of various kinds may be brought to a very high degree of excellence. The marking of the selected blooms may be effected by attaching to them small pieces of coloured worsted or some such material; and the seed produced by the marked blooms should be carefully collected as soon as fairly ripe. Where the production of hybrids or cross-bred plants is attempted, fecundation must be induced artificially, an operation which requires considerable care, and as a *sine qua non* to success, it is necessary that the blooms selected to bear seed, should be emasculated at an early period of their existence, that is, the anthers should be carefully removed, and in the case of some species, it is necessary to do this even before the blooms have expanded, in order to prevent the possibility of self-fertilisation; in the case of some small flowering species, however, there is some difficulty in effecting this, although it is easy enough to accomplish it, in the case of such plants as the Petunia, &c., by merely slitting a small portion of the tube of the corolla, and removing the unripened anthers, taking care at the same time to avoid injuring the stigma, which should be afterwards carefully watched; its slightly glutinous condition, will indicate its readiness for the application of foreign pollen, which should be carefully applied with a camel-hair pencil or otherwise. Roses which were budded in June or during the early part of July ought now to be looked to; the ligatures used to secure the buds in their places, should be loosened, to prevent the flow of sap being in any way impeded, and to admit of the natural expansion of the shoots and young buds; while buds which may have been inserted somewhat late last autumn or grafts put on last spring will, in most instances, have made strong shoots, and will require support in the form of stakes to prevent them from being blown off by high winds or from breaking down by their own weight when wet. The clipping and cutting in of Yew and other hedges connected with the pleasure grounds and parterres should now be proceeded with as rapidly as possible; although, on account of the long drought which has been experienced during the present season, there will possibly be much less to remove than is usual. Cuttings of all sorts of bedding Pelargoniums should now be inserted without further delay wherever they are to be obtained. In many instances, however, it is to be feared that they cannot, as yet, be taken from the beds in the flower garden without injuring them; but, where there is a well-stocked reserve garden, cuttings of all sorts may be taken from that department without fear of disfigurement. They may be inserted in the open border in lines or otherwise, and may remain in that condition until the beginning of October, when they should be lifted, potted singly, and placed under glass, or they may be inserted four together in 4-inch pots, and placed on cinder ashes in the open air.—P. GRIEVE, *Culford Gardens, Bury St. Edmunds.*

Roses.

Briar stocks will require more attention than usual this season to get the lateral shoots to grow strong enough for budding; all laterals,

except two or three at the top of the Briar, should be cut away, and all root suckers should be removed at once. I find that a slight mulching of leaf-mould, old tan, or of any decomposed garden refuse, keeps the ground among Rose Stocks from cracking, and also helps to retain moisture, whereby lateral growth is much benefited; this season's Stocks should have a good watering two or three times a day, before they are budded, an operation which will cause the bark to rise more freely than it otherwise would do. If the bark does not rise well it is of no use to bud, but, on the other hand, budding must not be deferred until the bark gets set. July and August are the two best months for budding, and our finest show blooms the following spring are cut from Roses budded in the autumn. In budding, select the best and most prominent-looking buds for the purpose; those from the middle of the shoot are best; the top ones are often too soft, and the bottom ones are not sufficiently developed and often lie dormant; the bud should be cut clean out and the heel should not be more than $\frac{1}{4}$ of an inch long; make an incision with the budding knife in the form of a T about 1 inch long, on the base of the lateral shoots, carefully raise the bark and then insert the bud, taking care to get the heel close down to the stock; then make all secure by tying with soft wool or matting. The following six varieties worked on strong Briars, if kept well trained, make excellent umbrella and pyramidal trees, viz.:—Gloire de Dijon, Climbing Devonensis, Anna Alexieff, Jules Margottin, Duke of Edinburgh, and Princess Mary of Cambridge. Of these, the two first are Teas, the rest hybrid perpetuals.—H. G.

Indoor Plant Department.

Attend to the training of climbing plants, or they soon get a confused mass. Keep a diligent look-out for insects of all kinds, for they increase with the temperature of the season, and if left even for a time entail much more labour and do a great amount of injury. Give now a little more air, less shade, and give less water at the root, as well as in the atmosphere. This will assist the season's growth to ripen; but do not reduce the temperature of the stove, as we see frequently done, until the ripening process is complete, that is, the wood well matured and hard. Plants that are prematurely put to rest by the unnatural method of reducing the temperature before the growth is ripened, are almost certain to start into growth when not wanted, during the application of the extra heat required during severe winter weather; in which case it is useless to expect a satisfactory amount of bloom. Allamandas, grown in pots with the intention of training them on wire or wooden trellises, should have their branches allowed to grow loosely upright, until they are either opening their first flower buds, or nearly so; as, if trained down as they make their growth, they never bloom so satisfactorily, as when the point of the shoot is brought down lower than the head of the plant; the first effort the plant makes is to adjust the balance of the sap, so rudely disturbed by pushing the eyes of the shoots that are bent over the top of the trellis, and so starves the points of the shoots from which the bloom ought to proceed; and this holds good of all plants of a similar character. Numbers of seedling Ferns of some varieties will make their appearance—such as Adiantums, Lomarias, Davallias, Dicksonias, and these, if carefully taken up without materially injuring their roots, and potted in small pots, after which kept a little close until they get established, will be found very useful, either for standing amongst the larger plants, filling Fern-cases, or for decoration in other places apart from the Fern-house proper. All the stock should be gone over repeatedly, during the season of growth, with brush and sponge, in order to remove any insects that will now thrive apace with the warmth of the season, and which, if left to themselves, even for a comparatively short time, entail a great amount of labour, and spoil the appearance of the plants. Continue to encourage the growth of Azaleas by closing the house early—say by four o'clock, syringing well overhead, and by throwing an abundance of water about the paths and floors of the house. It should be borne in mind that these are hill-region plants, and that, in a state of nature, they grow in a moist atmosphere, different from what they often receive under cultivation, where we see them making their young growth with small sickly foliage. Azaleas are plants not easily killed, and consequently exist for years under such treatment, but they bear no comparison with plants well-grown. Some hard-wooded plants will now have completed their growth, and may be placed in a sheltered place out of doors, where they will get a moderate amount of sunshine, which will harden their growth and help them to get through the dull autumn and winter months without the attacks of that certain visitant to unripe foliage—mildew. The stock should be gone over twice a day in bright weather to see that nothing suffers from want of water. Encourage Heaths, but especially the summer-flowering kinds, to make their growth. In case of such as have almost completed it move them out

of doors, where they will receive all the light and air possible; but guard the pots from the full action of the sun, otherwise the roots may suffer, more especially such pots as are well filled with roots. They ought to stand on 6 inches of ashes to exclude worms, and if there are no means at hand to protect them from drenching rains, they should be laid down on one side during heavy rainfall. This will keep the roots from being saturated with wet.

Orchids.

Give less moisture both at the root and in the atmosphere to such pseudo-bulbous species as have finished their season's growth and seem inclined to rest. It is, however, impossible to lay down general rules as to the watering of Orchids, the most successful cultivators being those who treat every individual plant according to its requirements. Orchids come from so many different climes, and their seasons of growth and rest are so variable, that all one can do is to assist Nature instead of thwarting her, when all will be well. Pleione which have finished their growth should have a few weeks rest, and preparations should be made to re-pot them as soon as the blooming season is over, for like most other *Cœlogynes*, their flowers and young growth are produced simultaneously. *Odontoglossums*, *Cypripediums*, and cool growing Orchids, as *O. macranthum*, *O. serratum*, *O. zebrium*, and *O. obryzatum*, will require copious supplies of water at the roots. *Masdevallias* will, in many cases, be making new growth, and should have as much light as possible, and copious supplies of moisture at the root. If the *Sphagnum* on the top of the pot is not in a fresh and growing condition, it should be at once renewed. Living *Sphagnum Moss* is indispensable to the Orchid grower, and if it keeps fresh and green it is one of the surest signs that the temperature is sufficiently genial, and that the atmosphere is charged with enough humidity to suit most kinds of Orchidaceous plants. Plants in flower, such as *Odontoglossum Alexandræ*, *O. Schlieperianum*, *O. vexillarium*, *O. Roezii*, *Masdevallias*, *Oncids*, *Miltonias*, *Cattleyas*, and *Trichopilias*, may be removed to the conservatory, where, however, a little fire-heat will be essential on cold and wet nights, otherwise, the flowers will suffer from an excess of moisture and decay prematurely.—F. W. BURBIDGE.

Hardy Fruit.

It may seem late to many to give the advice to finally thin all stone and other fruit to a medium crop; but, it is not yet too late. Late Peaches, Nectarines, Plums, &c., are never safe until thoroughly stoned; even in the finishing process they often cast a good many fruit, and, therefore, it is safer to leave reserves until the stoning is completed. There is something analogous to stoning in the growth of the seeds of Apples and Pears; a good many fruits often fall just as they are about to take their second or final swelling. When these are off, all excess should be removed, and, in all cases of fruit thinning, the worst shaped and worst placed, should, of course, be taken. In thinning Pears, not only cracked fruits, but those that have a tendency to crack, should likewise be picked off. The severe thinning of fruits not only improves the quality and size of those left, but adds to the health and strength of the trees. By thinning early we probably divert the vital forces that would have gone to develop those removed into those that remain. In late thinning we probably fail thus to divert the strength meant for one fruit into another; but, the act is useful, nevertheless. The entire tree gains by the husbanding of its force, and each fruit left shares in the greater plenty provided by the enhanced strength of the tree. The late showers have been very beneficial to fruit trees, and, indeed, for all wall trees, nothing is more useful than a daily artificial shower over head in the afternoon and evening of every hot day. These showers refresh the leaves, and develop the fruit to a fuller size than it otherwise would be. No practice tells more on the size and quality of Peaches than this daily overhead sprinkling, up to, say, within a fortnight of their maturity. It is, in fact, as much or more needed in August than in any month of the year. It is death to spider and most other insect pests, and gives new life and greater vigour to the entire tree, root, leaf, and branch. Protect, as much as possible, ripe fruit and fruit ripening from the attacks of insects. Hollow stems of umbelliferous plants, or short lengths of large reeds, are the best traps for earwigs and woodlice, and if a drop of sugar and water is sent into them, also for ants—the most destructive of all. These should be placed with one end under a branch near to the fruit and emptied into boiling water every morning. Wasps have hardly appeared yet, but, as soon as the first is seen, hang wasp bottles, baited with beer, against the walls; these are so effective for wasps that the bottles will require emptying every morning, and wasps may be destroyed in such a way as must tell against these greedy hosts. Wasp nests must also be sought for, discovered, and totally destroyed by being suffocated with a fussee of sulphur and gunpowder, or, simpler still, a rag or

piece of cotton-wool dipped in turpentine or carbolic acid. A pint of tar poured into the hole is also a disabler, and a final—though slow and cruel—mode of destruction. Birds can be netted off, but we cannot master these smaller insects unless by destroying them, and to have perfect fruit, we must see to their prompt destruction. Apricots and all other fruits should be gathered the moment they are ripe, and no fruit be allowed to decay on the walls nor in the garden.—D. T. FISH.

Kitchen Garden.

Spring Cauliflowers are an important crop in most places, and require a considerable amount of attention for a long period in order to secure a satisfactory result. The time of sowing has great influence upon the future crop turning out satisfactory or otherwise, for if sown too early—and a very few days will sometimes make an important difference—many of the plants may button or turn prematurely, and thus be useless. To obviate this difficulty wherever it may have been felt, it will be better to divide the seeds into three portions and make three sowings, at about a week or ten days intervals. In the north, the first sowing should be made about the 10th of this month; in the midlands, about the 15th; and in the south, from the 20th to the 25th; and, the last sowing, at least, should be made in a frame. In cold late situations I have always found it the best and surest plan to delay sowing till about the middle of September, and to sow in boxes in a frame; but, after the seedlings have come up, in order to have sturdy little plants, abundance of air should be given. In January, a sufficient number for forcing, or for hand-lights, should be potted into 60-sized pots, and placed in any warm house or pit near the glass, where a free ventilation can be had in favourable weather. In about a month they should be taken to a cold frame and hardened off previously to planting them out under hand-lights or in any warm situation. A few of the strongest may be potted on into 8-inch pots for forcing in pots. With liberal surface dressings and free applications of liquid-manure very good Cauliflowers may be obtained early in this way. Of course, all this implies that there is sufficient space under glass for this purpose; and, where this can be obtained, Cauliflowers will force as easily as Potatoes or any other vegetables. Between this and the middle of the month is a very good time to make the last sowing of Turnips for use in spring; in fact, in the north this should have been already done. For this purpose I sow the Chirk Castle Black Stone; it is very hardy, and displays a less tendency to "bolt" in a mild spring than any other Turnip with which I am acquainted. Have the Mushroom-house thoroughly cleaned out and the walls white-washed, pouring boiling water into all cracks and crevices to destroy woodlice, &c., so as to start the autumn and winter beds next month in a house free from insect pests. There will probably be plenty of Mushrooms in old pastures from this time till October, if we have sufficient rainfall to moisten the ground. A warm summer if followed by a dripping autumn is usually very productive of Mushrooms. In sowing Lettuce at this season the Bath Cos must not be forgotten, as, from its compact growth, it is easily lifted when full grown and placed under cover in bad weather. The Tom Thumb Cabbage Lettuce should also be sown in quantity. Sow in an open situation. As the days are now rapidly shortening, and the sun losing its power and wherever there is not sufficient moisture in the land to cause the seeds to germinate, it will be better to water the bed thoroughly before sowing, and afterwards shade with branches, rather than water after the seeds are sown.—E. HOBDAY.

Cottagers' Gardens.

The season for sowing some of the most useful garden crops is now drawing near, and, if possible, ground should be selected for them that has been dug up some considerable time; for if very dry soil is dug up and cropped immediately, it will be almost impossible to find moisture enough for seeds to germinate in it. The principal sowing of Cabbage should be made at once; Onions of the Tripoli or Giant Rocca kinds should be sown partly at the middle and partly at the end of the month; sown at these times they succeed better with us than spring sown Onions, especially those transplanted from late sowings. Turnips succeed well after early Potatoes, which may now be lifted. Vegetable Marrows and Cucumbers will now be bearing freely, and should receive constant attention in the way of thinning both shoots and foliage; the fruit should be cut directly it is fit for use. Scarlet Runners should receive liberal supplies of water; planted in patches by the sides of walks or against fences, they form one of the most ornamental as well as useful crops in the garden. Herbs should now be dried and stored away in an open shed for winter use; the old plants will yet have time to make a good growth before winter. As regards plants (such as Stocks and Wallflowers) they may be transplanted, and Polyanthuses and Primroses may be divided.—JAMES GROOM.

HOW WE ACQUIRED A TASTE FOR FLOWERS.

"WELL I think I can tell you how we all came to be so fond of flowers, and to be able to grow them, and a few vegetables also." The speaker was apparently a well-to-do mechanic, neat and tidy in his appearance, and with a greater look of intelligence and refinement in his countenance than is common among people of his class; his auditors were strangers from a distant part of the country, to whom the pretty, tasteful, and well-cultivated gardens attached to the cottages about them were evidently novelties. "You see, when I was a young man and just out of my apprenticeship, there was a great to-do in this city of ours among what were called the working classes—just as if many a man who never soils his hands has not to work hard with his head sometimes—about shorter hours, higher wages, and so on. I daresay the masters and men had each some cause to complain of each other, but I am not going to enter into their quarrels and battles; I only say, that after years of bother, matters were arranged on a basis apparently satisfactory to both parties. When that was the case, the men had a deal more money to spend, and more time in which to spend it, than they ever had before. Few suitable means of getting rid of this time and money were available to them. Their faculties were not trained so as to enable them to enjoy the various museums and other interesting institutions which were open to them; and these, although professedly free to all, were in general hedged round with many irksome rules and regulations, rendering them distasteful to the very classes they were intended to benefit. In short, they did not, for one reason or other, take advantage of the means of improvement at their disposal. Instead, then, of attempting to ameliorate their condition by mental cultivation, the majority of men, after their day's work was over, spent their evenings in drink-shops and singing saloons, to the great profit of the publicans and the benefit of the revenue; but a few, of whom I was one, used to take good long walks into the country, thereby enjoying the pure air, and the many and beautiful objects which Nature so liberally provides for the benefit of every one. In some of our rambles we had often to pass nursery gardens, which always stood temptingly open, as if inviting us to enter and inspect them. When we had summoned up courage enough to go inside, we found no one to interfere with us, and we were welcome to wander about just as we pleased, and to see whatever was to be seen. If at any time we made any inquiries of the workmen, they answered them with civility, and appeared anxious to impart any information which was in their power, and by so doing interested several of us so much about flowers, that we resolved, on the first opportunity we had, to visit the Botanic Gardens, where we hoped to learn much that we could not do in the nurseries, as we were unreasonable enough to suppose that, as those gardens were for the public benefit, there would be some properly qualified officials there to enlighten the ignorance of the visitors. The Botanic Gardens were very fine then, but not nearly so much as they are now. In those days the entrance to them was only by a paltry little door in a high dead-wall, evidently intended to prevent the interior arrangements being seen by passers-by, and reminding one far more of the entrance to a lunatic asylum or penitentiary than a place for recreation. On ringing a bell an attendant appeared and opened the door just wide enough to admit us. He cast rather a suspicious glance at us, and evidently thought it very hard to have been put to the trouble of opening the door for us. I remember that over the door there was a notice about the hours when the gardens were open and when shut to the public, and part of it was that from six till eight on Saturday evenings during summer they were open for the benefit of the working classes. None of us could at all make out why only one evening of the week was allowed for this very large section of the community, as every other night as well as Saturday could be made available by some portion of it, especially now that the short-time movement was fairly inaugurated. Whatever idea the authorities might have intended, we took the notice as a sort of hint that the working classes' company could be dispensed with at all other times; and we could not help thinking how much better it would be were the gardens open every evening till sundown, so that all classes whatsoever might come with their children, whose school hours would be over, to enjoy the many pleasant sights to be seen within the walls.

"This first visit of mine was, however, the means of giving me a new interest in life, for which I have ever since been very thankful; and I fancy that, from what I then saw and heard, I have been useful in increasing the happiness and comfort of many of my fellow workmen. Whilst walking through the conservatories, Palm-houses, &c., feasting our eyes on all the beauties they contained, we happened to overtake a party of jolly, good-natured looking sailors, who were evidently well pleased to see growing here many plants, trees, and flowers with which they had formed a kind of acquaintance during their wanderings about the world, but apparently thought little of them here when compared with the specimens they had seen abroad,

and were quite as much bewildered as we were at the prodigiously long names that some of the things were labelled with. 'Why, look ye here,' said one them to his companions, 'whatever do they give this little chap—not big enough to make a thole-pin for the dingy—a name as long as the mainto'-bowline for?' Should any one remark to that such-and-such a thing was as big as a lump of chalk, or as long as a bit of string, I would at once know what he meant, because everybody knows what they are; but to my mind the mainto'-bowline was only an embodiment of a straight line, length without breadth or thickness, and as I wanted to know something more about it, I asked the sailor what it was. Instead of answering me, he only stared at me for a while with the greatest amazement, and turning to his shipmates, said; 'Well, boys, longshore folk call us ignorant, but did any mortal man ever see a fellow on board come to that one's time o' life who didn't know what the mainto'-bowline was! Why, I expect he wouldn't know the best bower from the cook's tormentors, were he to see them together. But, I say, what's the use of staying in here, looking at these things; we see enough of them when we're away from home. Let's go outside, and have a roll on the Grass, for we can't see a bit of turf like that except in the old country.' So commiserating my ignorance, they left me to have their roll on the nice velvety turf, whilst I staid behind, pitying the taste of anyone who would prefer a patch of Grass to contemplating the beauty of the exotics. I strolled away from my companions, and found the very commonest flowers with names I could not understand; but pondering on the subject, I saw that owing to the enormous multiplicity and variety of plants, some accurately distinct appellations common to all countries were necessary. It was rather painful to see so few people taking anything like an intelligent interest in the plants set out for their instruction. The most of them only admired the flowers. In the fine shady walks, ladies and gentlemen, generally young, were seen lounging along in pairs; the lady intently examining the toes of her boots, and poking holes in the gravel-walks with the point of her parasol; and the gentleman quite as intently examining the lady's ear, or perhaps watching her curls—they used to be worn in those days—and both seemingly much at a loss for anything to say to each other. The gardens, in fact, were more a lounge for idlers than anything else. Perhaps the sight of so many plants, native and foreign, in time works a revolution in the feelings. In my own case, I felt no small enjoyment in my rambles. My mind was, as it were, opening on a new world of rational pleasure. As often as I possibly could, I returned for a walk in the gardens, and always brought some of my companions with me, till at last quite a large number of young men and women began to take an interest in flowers, and to entertain a desire to obtain information about them. So we got an obliging young gardener to come when his work was over, and tell us as much as he knew about the plants and flowers. By-and-bye this gathering became a regular class; and it was soon observable that those who attended it began to show a great deal more taste and neatness, not only in their dress, but in their general household arrangements, than they did before. Here, then, was the beginning of a social reformation, all arising from the habit of looking at plants and flowers. The authorities saw this, and appointed a gentleman to give popular lectures on the vegetable kingdom. The Latin and Greek names were translated into English equivalents, and although they still continued of a considerable length, they were in a language we all knew, and they, therefore, conveyed some meaning to our minds, and were more easily remembered. These lectures were largely attended, and the gardens came to be so very much frequented, that they were kept open till sunset every day, and the blank-wall was pulled down, and replaced by the fine open railing and ever-open gate which is there now, affording a refreshing peep to all who are passing. About the same time, too, the magistracy of the city was busy pulling down the old lanes and closes with which it abounded, and letting more air in about it; and some speculators, finding so many people taking to gardening, built cottages in the suburbs, where they could have bits of garden-ground attached to them. Then the people who took those cottages discovered that they wanted to know something about vegetables as well as about flowers, and, by dint of determination, got a suitable portion of the garden set apart where the best sorts could be grown, and where people could be taught the best modes of growing them. Such I believe to be the reason why so many men in and about our city have gardens, and know how to cultivate them; and how their wives, seeing them take so much pride in their outdoor neatness and decoration, and vegetables, soon learned to keep all indoors neat and tidy, and to have the well-grown vegetables well cooked. In consequence, also, of this taste for horticulture, the men had to consult books on the subject, and soon had little libraries. But reading gardening-books led them into reading about other subjects, and you will now see in almost every cottage a few shelves of well-selected works by the most intelligible

authors in almost every department of science. What a grand future would open on the condition of the manual labouring classes generally, were they simply to begin to take an interest in flowers! With improved tastes all else would follow. Even now, in some places we are favoured with a glimpse of that greatly to be desired future."—*Chambers' Journal*.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

AUGUST 5TH.

THE most remarkable features of this meeting were the new Orchids and other plants staged by Messrs. Veitch and Mr. W. Bull; Mr. G. F. Wilson, Mr. Barr, and others, also furnished splendid plants and cut spikes of Lilies, chiefly of the *L. auratum*, *L. speciosum*, *L. Thunbergianum*, and umbellatum types. Two splendid smooth Cayenne Pines, weighing 9 lbs. each, came from the Royal Gardens, Frogmore.

Orchids.—Messrs. Veitch & Sons exhibited several hybrid Lady-slippers, including *Cypripedium Sedeni*, *C. Harrissianum*, and *C. Dominianum*, all of which are now recognised as valuable additions to the genus to which they belong. A remarkably healthy plant of the bright purple-flowered *Aërides Huttonii* bore a spike of flowers nearly 2 feet in length; this plant is very distinct from any other species of the genus in cultivation, and, evidently, improves under good culture; a plant of *Saccolabium Blumei* majus bore four fine wreath-like spikes of pearly-white lilac-tipped flowers, and a species of *Stanhopea*, something in the way of *S. oculata*, also bore a seven or eight flowered spike of yellow flowers, profusely spotted with brown. In addition to these the collection included a fine specimen of *Masdevallia Veitchii* with four spikes, *Aërides suavisimum*, the deep claret-purple flowered *Miltonia Morelliana*, and others. Mr. Bull had a plant of the snowy-white *Cypripedium niveum*, *Odontoglossum Roezlii*, and a healthy specimen plant of *Lælia elegans Andersonii*, bearing a splendid spike of deep rosy flowers, the lip having pure white lateral lobes, and a rich crimson-purple central one; it is one of the best and most distinct of all the forms of this well-known Orchid. Mr. Denning exhibited a cut flowering pseudo-bulb of an unnamed *Dendrobium* bearing dense clusters of vivid orange-yellow flowers; in habit, the plant seems to be near *D. secundum*, but the flower-spikes are more copiously produced, the bulb shown being perfectly wreathed with flowers; the sepals, petals, and lip, are conspicuously striped with reddish-brown, and the plant is certainly worth cultivation as one of the most distinct species hitherto added to our collections.

New Plants.—Of these Mr. W. Bull had a fine group. Conspicuous among them was the ivory-veined *Arad*, *Phyllatanium Lindenii*, with great halberd-shaped foliage; *Dracæna Shepherdii*, one of the most robust of all the species; *Croton spirale*, well coloured; *C. majesticum*, *C. volutum*, and others. Some of the Cycads in this group were very ornamental. *Macrozamia plumosa* is one of the freshest and most graceful of all the species, the leaflets being a foot long and very slender, drooping elegantly on all sides.

Roses.—Messrs. Geo. Paul & Son, of the Cheshunt Nurseries, staged eight stands of cut Roses, many of the flowers being in fine condition. Among these we may note *Louis Van Houtte*, a fine velvety flower; *S. Reynolds Hole*, something in the same way, but much darker in colour; *Gloire de Dijon* and *Madame Villermoz*, both good; *Camille Bernardin*, an old favourite, of a pale rosy-crimson colour; and *Lælia*, a large flower, of the most delicate rosy-flesh; *Baronne Rothschild*, one of the very best of light exhibition kinds; *Ettiens Levet*, a deep rosy-crimson; *Madame Baumann*, and others.

Miscellaneous.—Mr. R. P. Barr staged a fine collection of cut Lilies, among which we noticed *L. tigrinum* fl. pl., a double form well worth a place in all collections, the white-flowered *L. longiflorum*, and others of the umbellatum type. Mr. H. Loader, gardener to H. P. Hennell, Esq., Mayo Road, Forest Hill, sent a splendid specimen of *Lilium auratum* with two stems, each about 10 feet in height; the larger of the two stems was fasciated towards the top, and bore the enormous number of forty-eight flowers, while the smaller one bore seventeen. The plant was well clothed with healthy foliage to within 18 inches of the pot, and deserves mention as an example of what this plant is capable of becoming under superior cultivation. Mr. Offord, of Upper Clapton, sent *Ageratum*, *Clapton Gem*, a dwarf and tolerably free-flowering form of *A. mexicanum*. Mr. Woodbridge sent fine cut sprays of *Clethra arborea*, a beautiful half-hardy evergreen shrub, bearing terminal panicles of pearly white flowers in great abundance; also *Pavia macrostachya*, with deep green lobed leaves and slender terminal spikes of white flowers with long stamens and crimson anthers; *Hibiscus syriacus*, and both rosy and white varieties of *Ceanothus americana*. Mr. Stanton, Silk Mills, Lewisham, sent two seedling *Lobelias* of fair average merit, and Mr. Eckford sent cut trusses of *Verbenas*. Mr. R. Dean sent stands of French and African Marigold flowers, very double and bright in colour, also fine blooms of *Camellia*-flowered Balsams. Messrs. F. and A. Smith sent a fine group of Balsams, with large and richly coloured flowers. The plants were sturdy and dwarf, the colours being both variable and distinct. It seems a pity so useful a decorative plant and one which everyone can grow, either out of doors or as a window plant, should not be more generally cultivated.

Fruit and Vegetables.—These were limited in quantity, although some specimens of both were above average merit. Mr. R. Dean sent

two fine dishes of Potatoes from Bedford. One variety was a large white Kidney, raised by Mr. Robert Fenn, of Woodstock, and the other, Snowflake, a fine American variety of more than average merit. The same exhibitor also sent a dish of Exhibition Runner Bean, evidently a good form of the old Scarlet Runner, and a hardy frame Cucumber, named Green Gem, on account of its fresh colour. It is said to have an excellent constitution, and to be a prolific bearer during the summer months, succeeding well as a winter-fruited variety treated in the usual way. Mr. Morris sent two dishes of a new seedling Potato, not named. Messrs. Barr & Snigden sent fruit of Marquis of Lorne, Duke of Edinburgh, and Luton Hoo Cucumbers for comparison. Mr. Woodbridge furnished a small collection of Plums; Mr. Sage excellent fruit of Walburton Admirable Peach; and Mr. J. Clark, Roehampton, an excellent dish of Moor Park Apricot.

First-class Certificates were awarded to the following novelties:—

Metrosylon filare (Bull).—An elegant Palm, belonging to the pinnate-leaved section, and having gracefully recurved leaflets, the leaf-stalks being rather formidably armed with extremely slender brown spines. It is a useful addition to the genus to which it belongs.

Zygopetalum, seedling (Veitch).—This plant resembles *Z. Mackayii* in habit, the sepals and petals being dark brown, with a bluish-purple lip, and the curiously plaited crest peculiar to the group. It is a very interesting addition to a useful and well-known group of showy-flowered Orchids.

Lilium speciosum atropurpureum rubrum (Wilson).—This is an extremely fine and early-flowering form of the common Japanese Lily, the individual flowers being 8 to 9 inches across, and very richly coloured, while the plant itself is robust, and scarcely exceeds 2 feet in height.

Dendrobium, species (Denning).—This is a beautiful and free-flowering addition to a division of the genus, not remarkable for conspicuous-flowered species. It may be likened to *D. secundum*, but flowers more profusely, bearing orange-yellow flowers, with segments striped with brown.

Fuchsia procumbens (Kinghorn).—A Botanical Certificate was awarded to this graceful New Zealand species, which has recently been raised from seed, and flowered in several collections. It is not showy, but possesses a graceful habit, and may be useful to hybridisers.

The New Approach to the Thames Embankment.—The block plan of the proposed new approach, recently laid before the Metropolitan Board of Works, shows a road 90 feet wide, which is nearly the same width as the Embankment roadway itself. Much discussion has taken place as to the width of the street, it having been contended that such a street in such a situation could hardly be made too wide, the only doubt being whether it ought not to be 100 feet in width.

The Timber of the United States.—Professor Brewer, of the Sheffield Scientific School of Yale College, has surprised the meteorologists of the old world, who have been led to believe that the climate of the United States has been gradually changing through the destruction of its forests. He has written a letter, in which he shows by figures that no such destruction has been going on, and if there has been any change of climate, it must be from some other cause. He says, that in the older settled portion of the Eastern States—New England and the Middle States—one third of the whole farming area is still woodland, and that if we extend our observations further to the south and west the facts are still more striking.

Predatory Chickens.—Try Max Adeler's method, which he describes as follows:—"We had a good deal of trouble last summer with Pitman's chickens; as fast as we planted anything in our little garden, those chickens of Pitman's would creep through the fence, scratch out the seed, fill up, and go home. When the Radish-bed had been ravished in this manner for the fifth time, we complained to Pitman. He was not disposed to interfere. 'Adeler,' he said, 'I tell you it does 'em good; and it does them beds good to be raked over by chickens. If I had Radishes, give me chickens to scratch around them and eat up the worms. Radishes that haven't been scratched ain't worth a cent.' Then we climbed over the fence with the determination to take the law in our own hands. We procured half-a-peck of corn and two dozen small fish-hooks. Fastening the hooks each to a grain of corn, we tied wire to each hook. Then we scattered the whole of the corn on the Radish-bed, and fixed the ends of the wires to the biggest sky-rocket we could get. The rocket stood in a frame about 10 yards away from the hooks. That very morning Pitman's chickens came over, and instantly began to devour the corn. We were ready; and, as soon as it was evident that the hooks were all swallowed, we applied a match to the rocket. It is regarded as probable that no barn-yard fowls that have existed since the days of Noah, ever proceeded toward the azure vault of heaven with such rapidity as those did. A fizz, a few ejaculatory cackles, a puff of smoke, and Pitman's roosters and chickens were swishing around among the celestial constellations without their feathers, and in some doubt respecting the stability of earthly things. Pitman never knew what became of his fowls; but, when we read in the paper next day that twenty-four underdone chickens, with fish-hooks in their craws, had been rained down by a hurricane in New Jersey, we felt certain that that sky-rocket had done its duty."

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HARDY ERICACEOUS PLANTS.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

No class of shrubby plants now in cultivation is, perhaps, more interesting or better adapted for rock garden purposes than the hardy dwarf Ericaceous group, such as the species of *Menziesia*, *Daboecia*, *Ledum*, *Cassiope*, *Andromeda*, *Vaccinium*, *Erica*, *Calluna*, also *Azalea procumbens*, *Arctostaphylos alpinus*, *Bryanthus erectus*, and *Rhodothamnus chamæcistus*, &c. They are mostly kinds which naturally grow in high and dry situations, and stand with impunity a considerable amount of drought, as has been sufficiently tested during the past summer, more particularly when they become thoroughly established in rock garden compartments, or between the crevices of the stones comprising them. When an Ericaceous rockery is to be formed, the ground selected ought, if possible, to slope towards the north, or should be placed behind a south wall, in order to avoid full exposure to the sun, where such plants would be apt to dry up, besides requiring more artificial watering, which is apt to prove injurious to their leaves during a period of bright sunshine. If the rockery for such plants has to be constructed on comparatively level ground, the soil laid down for the purpose should be blocked into shape according to the taste of the operator, but made to slope towards the north. The south slope can be arranged irregularly, and afterwards planted with common or hybrid *Rhododendrons* interspersed with portions of Grass lawn. When the north or rock-garden slope has been worked into the outline wanted, which can be done with any kind of soil, the upper surface can be mixed with rough peat partially intermixed with broken pieces of sandstone free of iron, say from half-an-inch to 2 inches in diameter. The stones to be used for forming the plant-boxes of the rock-work must be about 16 or 18 inches long, and not less than 2 inches thick, also of a porous nature, and each placed about two-thirds into the soil, forming compartments from 6 to 12 inches in diameter, these spaces to be filled with chopped peat and broken stones. If the rock-work slopes much, which is highly desirable, it ought to be arranged, if possible, to show irregular artificial quarries, by dipping here and there into the ground. It is of importance, while planting the boxes, to have the surface-soil of the back portions of each compartment a little lower than the front, so as to enable the water, either natural or artificial, to sink down behind the plant, instead of running off, as it is apt to do, when sloping to the front. By this simple arrangement the moisture is not lost, and the stones being kept much longer moist, the roots will be found to adhere more firmly to them. All the Ericaceous, and the allied orders of plants, possess variety sufficient to fill a rock-garden of themselves, and varieties can be had and planted in duplicate to keep up a succession in a blooming state in the various compartments more or less all the year round. For the summit or highest portions of the rock-garden, compact plants of *Rhododendron hirsutum* and *R. ferrugineum* are admirably adapted, and, in such situations, mature their flower-buds well—often more profusely than they do in ordinary peat borders, where they may grow more vigorously, but produce flower-buds less abundantly. Such plants as *Menziesia empetrifolia*, *M. Drummondii*, and *M. cærulea* are also well suited for rock-garden culture, and flower profusely every year. An occasional surfacing of fresh peat and sand will be found well adapted for such plants, particularly after the flowering is over, and before the young growths begin to form. The *Menziesia cærulea* seeds abundantly in such places; but, with the exception of one or two required for seed-bearing purposes, the flowers of all the others should be clipped off with a pair of scissors, so as to induce a free growth for the flowering of the following year. *Cassiope tetragona* and *C. fastigiata* are interesting objects for rock-garden cultivation, and flower profusely. Like the *Menziesias*, they are improved by having a little sifted

peat mixed with sand put amongst their stems; they will root into it, and their appearance will be improved for the following year. The *Daboecias*, white, purple, and variegated, are also very suitable rock plants. With the exception of the compact-growing varieties, all others must be clipped in after the flowering is over; they are likewise improved by having a little fresh soil placed amongst their stems; it will induce fresh roots, and the plants will be greatly benefited by it, instead of appearing long and lanky, as they are frequently seen. All hardy Heaths, such as *Erica Tetralix*, *E. cinerea*, *ciliaris*, *herbacea*, *Mackayana*, *Watsonii*, *vagans*, as well as numerous varieties of Irish Heaths of the *E. mediterranea* breed, likewise the many forms and varieties of the Common Ling, *Calluna vulgaris*, are all extremely well suited for rock-garden cultivation, and all are improved by being more or less clipped. This clipping is mostly done, immediately the flowering is past, with a pair of sheep shears, and if properly attended to in this respect, they will continue in a compact-flowering state for many years, while the want of it causes them to be long and wiry, and if allowed to get into this condition, any after-cutting will have a tendency more to destroy than improve, particularly if the weather should be dry and sunny after being done. As the varieties of the Ling Heath flower at different seasons, I generally find it best to clip each sort as soon as the blooming is over. Few of the hardy Heaths prove more effective for rock-garden decoration than the varieties of the Bell Heather (*Erica cinerea*). When rooted from cuttings, which all hardy Heaths ought to be (see THE GARDEN for 21st December, 1872), and placed between the crevices of rock-work stones, although not more than one inch apart, peat soil having been previously placed there, the plants root down, the branches spread, and flowers are freely produced in these limited spaces; this mode of treatment must be towards a northern aspect. *Azalea procumbens*, both Scotch and American, are well-suited for rock-work purposes, the soil for them must be well supplied with stones, so as to allow their long roots to get freely down between them. The *Arctostaphylos alpina* (Black Bear-berry) grows admirably in rock gardens; like the dwarf *Azaleas* and many others, it is better to have the surface of the compartment, after being planted, covered with pieces of freestone, which prevents the soil becoming too dry, but which cannot happen if the compartment has a northerly aspect, but if placed in a situation where they are likely to get dried, a slight covering of *Sphagnum Moss* placed over the surface of the soil in the compartment before the stones are put on, will prevent over-drying. *Gaultheria procumbens*, *G. carnea*, *G. prostrata*, and *G. nummularioides*, *Vaccinium Myrtillus*, and *V. macrocarpum*, *Epigæa repens*, *Rhododendron lapponicum*, *Andromeda hypnoides*, *Diapensia lapponica*, *Pyxidanthra barbulata*, all Ericaceous plants, with numerous other dwarf shrubby ones, although not of the same family, deserve a place in the Ericaceous rock-garden, and, as they are reared immediately under the eye, they can receive more attention than they generally get in low level beds or borders, where such rarities are generally planted, and where they often get smothered with Moss or *Marchantia*. Of the latter class may be mentioned the dwarf species of *Rubus*, such as *R. arcticus*, *R. Chamæmorus*, *Dryas Drummondii*, *D. octopetala*, and *D. integrifolia*, *Galax aphylla*, *Polygala Chamæbuxus*, *Linnaea borealis*, both Scotch and American, as well as the varieties of *Empetrum*, *Pyrola*, and the dwarf Willows, as *Salix reticulata*, *S. lanata*, and *S. herbacea*, with many others not named here, when so cultivated, possess an interest infinitely greater than can possibly be derived by being reared in the ordinary way of low border cultivation. Most of the plants above enumerated, are now growing in the Ericaceous department of the rockery in the Edinburgh Botanic Garden, and, notwithstanding the dry summer, they have all stood well, flowering more or less abundantly, and possess infinitely greater charms for the general cultivator, than can possibly be derived from any other method of growing such plants. A good quality belonging to most of these plants is their evergreen character. An artistically arranged group of them in a rock-garden is full of beauty in mid-winter, even before the myriads of rosy buds of the spring flowering Heaths begin to open, and grouped along with silvery evergreen Alpine plants, the effect is all the more charming.

NOTES OF THE WEEK.

— Mr. J. BOSWELL SYME, Balminto, Kirkealdy, writes to us to say that he has some seeds of *Helleborus colchicus*, *guttatus*, &c., which he will be happy to distribute to anyone who cares to receive them. Early application must, however, be made as they should be sown at once. They will not vegetate if kept till spring.

— As will be seen by our advertising columns, a company has been formed to work Mr. Cowan's patent system of lime-kiln heating, of which we have spoken favourably on several occasions, and which is highly approved of by Mr. Bennett, of Hatfield, and other horticulturists, who have already given the plan a trial. We are glad to see that Mr. Cowan holds the position of managing director.

— We have received from Messrs. Teutschel & Co., of Colchester, a bloom of a very handsome Lily, named *Lilium Thunbergianum aureum nigro-punctatum*. Its segments, which are of great substance, are golden-yellow, shading off into soft orange-yellow at the edges, and profusely spotted with chocolate. It is a showy and valuable addition to late flowering Lilies.

— At the Hale Farm Nurseries, Tottenham, the pretty little autumn-flowering bulb *Acis (Leucojum) autumnalis* is now in bloom; as are also *Cypella Herberti*, a handsome Iridaceous plant with Tigridia-like flowers; *Chlora grandiflora*, a charming little bright yellow-blossomed Gentianaceous plant; *Echinacea (Rudbeckia) purpurea*; the brilliant scarlet *Pentstemon barbatus Torreyi*; *Erigeron glaucum*; and *Oenothera eximia* and *marginata*.

— On the recommendation of the Streets Committee, the Commissioners of Sewers for the City of London have passed an order to put Moorgate Street, Finsbury Pavement, Mansion House Street, and Queen Victoria Street under the permanent pipe system of watering of Messrs. Brown and Co., of India Buildings, Edinburgh. The three first mentioned thoroughfares are of asphalt, and the last mentioned of granite.

— ALMOST immediately the new road about to be made through the Green Park, in order to relieve the traffic from Piccadilly to the West End, will be begun. The new thoroughfare will lead out of Piccadilly, opposite Hamilton Place, and proceed through the park. Constitution Hill is not touched, but, on the contrary, remains intact, by the intended construction of an arch, under which heavy vehicles going eastward will pass, private carriages going by Grosvenor Place. The new road is to be 60 ft. wide, and will presumably be a macadamised thoroughfare.

— Mr. J. LUCAS, of the Geological Survey of England, has just published a treatise "On Horizontal Wells," in which he asserts that he gives a "solution of the problem of supplying London with pure water." Examining the geology of the greensands and chalk of Surrey, he finds that above 1,000 feet of porous strata rests upon a bed of "absolutely impervious clay," and he contends that "a tunnel driven along the strike of the beds, or water-level, must of necessity arrest all the water that is flowing down it as far as the gallery is carried." The geological evidence given appears conclusive; we may, therefore, hope that a source for the supply of London with "the best and purest spring water" has been discovered.

— Those engaged in building extensive stone-gardens, making costly geometrical arrangements for fountains, and other purely artificial garden "adornments," will do well to ponder over the following note:—"At a meeting of the shareholders of the Crystal Palace Company, which took place the other day, Mr. Wakefield in the chair, to consider a plan for the restoration of the building, Mr. Scott Russell said that he had made an inspection of the Palace at the request of the Reconstruction Committee. The whole of the capital expended on the part of the building which had been burnt down, both upon the building itself and its valuable contents, had been lost through the culpable negligence of some one, and there had not been any attempt made to restore that part of the structure. There had also, he found, been an entire wing of the Palace blown down, and no effort had been made to restore that portion either. He found the whole of the grand cascade of the waterworks, which had cost nearly £300,000, going to ruin. The two cascades lower down were also going to decay, and so was the building opposite, in which used to be seated illustrious people who visited the Palace. A great number of the pipes and communications of the waterworks were likewise going to ruin. On looking into the state of the machinery of the waterworks he was astonished to find that the economical portions had been allowed to go utterly to ruin, while the most extravagant and costly part of the works, which were but seldom used, had been maintained in full working order. As to the courts of sculpture, Mr. Russell found that the works had nearly all gone—where, he could not tell. From some a finger, a nose, or an arm was missing, and, apparently, there had been no attempt to replace the missing parts of the statues.

The magnificent collection of art sculpture was in a most disgraceful condition. The works were in such a state of decay throughout, that a very large sum would have to be speedily expended upon the property.

— THE Torbay Nursery, Torquay, hitherto in the possession of Messrs. Morgan & Sons, has just been purchased by Mr. W. James Veitch, the eldest son of Mr. Robert Veitch, of Exeter.

— THE last published part of the Linnean Society's Transactions contains Mr. J. Scott's Notes on the Ferns of British Sikkim, with eighteen plates, and Prof. Reichenbach's Enumeration of the Orchids collected by the Rev. C. Parish, in Moulmein, with six plates.

— Mr. JAS. ANDERSON, the well-known Orchid grower, the originator, and for many years manager, of the famous Meadowbank collection has now taken Meadowbank, with the view of converting it into an extensive nursery of indoor and hardy plants generally. Among these, Orchids will form an important feature.

— Mr. JACKSON GILLBANKS writes to us to say that in West Cumberland Mushrooms are so plentiful in the fields that they appear as if spread with "lime," a result, doubtless, wrought by heavy showers having fallen lately nearly every day for a week together in that district.

— We have received from Mr. Young, of Godalming, cut branches of his beautiful Golden Chinese Juniper named *Juniperus chinensis aurea*, a variety which promises to be a most valuable addition to hardy ornamental Conifers. For grouping along with Yews, Portugal Laurels, and other sombre-tinted evergreens, where striking effects are so much wanted, its bright golden colour will render it invaluable.

— THE Board of Trade has received from the Secretary of State for Foreign Affairs a copy of a French law, promulgated on the 25th ult., instituting a prize of 300,000 francs (about £12,000), to which may be added subscriptions from other sources, for the discovery of an efficacious and economical means of destroying the *Phylloxera* or of preventing its ravages. A commission nominated by the Minister of Agriculture and Commerce will determine the condition of competition and the award of the prize.

— THE white variety of *Hydrangea paniculata*, now in flower in Mr. John Waterer's nursery at Bagshot, and which will continue blooming till November, seems likely to prove a valuable addition to late-flowering hardy shrubs. The tree form of *Hedera Rægnieriana*, of which there are several plants in the same nursery, shows a very distinct habit and aspect, and will be useful for planting under the shade of trees, or as an isolated specimen on Grass. A new golden variegated form of *Juniperus chinensis* also seems likely to prove both useful and ornamental.

— ON Monday evening last a constable arrested a drunken man in the act of tearing up a bed of Geraniums in Hyde Park. He had uprooted no fewer than fifty-five before he was caught, and had spoiled a bed for the rest of the season. Brought before Mr. Newton, he could offer no defence, and he was severely punished by the infliction of a fine so heavy as to render it nearly certain that he will lie in prison for two months—the alternative penalty. It was stated in evidence that lately a great many plants have been missed, among them being specimens of choice varieties; and that we consider the worst symptom which the incident disclosed. Under such circumstances it is not surprising that the magistrate should declare, with emphasis, his fixed intention to impose no fines, but in future to inflict imprisonment. He hoped the fact would be made known far and wide. We readily welcome his resolve, and give publicity to his note of warning. The persons who steal flowers and plants are guilty of a delinquency which bears the stamp of meanness as well as crime. The public themselves can do a great deal in aid of the police by keeping a watch upon depredators.

— THE thirty-fifth anniversary meeting of the Royal Botanic Society of London was held last week in the Inner Circle, Regent's Park, Sir Walter Stirling in the chair. Mr. Sowerby, the secretary, read the annual report, from which it appeared that the number of new subscribers who had joined the society during the year, was in excess of that of last year, and also much above the average. The numerical strength of the society had been fully maintained. The exhibition of flowers and the evening *fête* had been most successful, and were gaining in popularity. The new range of greenhouses for the preservation of plants relating to the arts, manufactures, and domestic economy, commenced last year, had been completed at a considerable cost, and thus extended facilities had been offered to teachers, students, and others seeking information relating to the vegetable kingdom. Free admissions to study had been issued to twenty-six artists, 318 to professors and students, and 31,500 cut specimens distributed to them. Several improvements had been made in the gardens, and many new and interesting plants added to the collection. His Serene Highness the Duke of Teck was elected president for the year.

THE LIBRARY.

LANDSCAPE GARDENING "FOR PERPETUAL BEAUTY."*

"HE who aims high, aims well, though he hit not the mark as high as he aimed," is an oft quoted aphorism of one of our old divines, full of grand meaning and noble purpose. On perusing the early part of this most recent literary production on landscape gardening, with its high sounding title, embodying, as it does, beauty both past, present, and to come—in fact, "everlasting beauty;" it struck us that the foregoing aphorism would have been most happy in its application—clearly the aim of the writer was high—and equally clearly, does he fail to hit the point at which he aimed. Nay, more, as we progress through the volume, the feeling is, that the title of this work ought to have been not "perpetual beauty," but "beautiful for ever." Some years ago, we were called in professionally by an elderly gentleman of somewhat penurious proclivities, to solve the enigma as to how the arrangements of the grounds surrounding a new house were to be disposed of; we found our friend deep in the study of a dozen or more landscape gardening works, some ancient, some modern, all expensive; failing to realise out of one anything definite to suit his own particular case, he purchased another and so on, with a cumulative result, that in the end left him in a much more confused condition of mind than at starting. After glancing at the books, which, were in truth, a costly and a really valuable lot, we suggested that he should transfer them to his library-shelves, and accompany us round his garden, or rather round the site of his proposed garden, where we had no doubt a few hours would place us in a position to reduce the whole of his theoretical ideas to such practical data as would result in the preparation of the necessary plans, and the ultimate accomplishment of the work so as to render it, if not a perpetual beauty, at least an object of beauty, and for beautification, so long as it lasts. The perusal of the present work with its high sounding title, brought the foregoing little episode very pointedly to our recollection; had it then been in existence, it might well have formed the culminating volume in the series, as of all the works on landscape gardening, it has never been our misfortune to peruse one less practical, and less adapted to assist the amateur who essays to try his hand at the ornamental and picturesque improvements of his grounds. Why, then, should this be—why should the most recent emanation from the horticultural press in this line require such an unqualified verdict? Our author has had, at least, some practical experience, in addition to a practical training, and ought to have been able to give us something more consonant with that practice than is evinced in the work before us; we live in a practical age, why then preach high sounding platitudes reduced, every now and then, to a sort of multiplication table-like regularity, that to us appears to be thoroughly meaningless. Evidently, our author, or possibly our author's "learned friend," to whom he alludes in the preface, is an admirer of Ruskin, and so, indeed, are we. There is no English writer imbued with a more refined love for, or capability of, appreciating beauty than Ruskin, and, what is more, he possesses a power of language that enables him to convey those ideas clearly to his reader. In his "Stones of Venice," "Modern Painters," nay, indeed, in all his works, there occur passages replete with poetry and the highest moral sentiment combined, which a writer on landscape gardening might fitly take for the heading, subject, or text of each chapter of his book. The author's aim ought, however, to be, not to soar with Ruskin after, if we may so call it, a lame-winged fashion, but rather to remain on *terra firma*, which, indeed, he states it is "his glory to beautify," and reduce those grand thoughts and sentiments embodied in Ruskin's works to a practical form, whereby he may benefit himself, his profession, and mankind at large. Lest it might be thought that we are dealing too harshly with an author who, in his preface, pleads inexperience in authorship, we will give one or two quotations and leave our readers to judge for themselves. In his chapter on "Beauty and Comparison," he says:

—"The word 'comparison' is, perhaps, the best I can make use of in order to convey a sense of the general feeling which I desire to express. Plants should preserve their individual character in due subordination with the general arrangement, and not be jumbled up unmeaningly together to the ruin of all true effect. If, indeed, plants had less beauty than they actually possess, still it must wound the soul of the observer to witness the harshness and inconsequence with which they are often treated. Contrast, when rightly used, is, in truth, the source of developing great beauty; but if we neglect the comparison of our subject the results must prove unsatisfactory. In contemplating some scene of natural beauty with its refined foreground dying away into infinity, the soul is, as it were, filled up with and steeped in its harmony. No work in which the principles of harmony are violated can further the true interests of art, while those which instil a just feeling of unison with the subject, must necessarily do good. It is easy to find examples. Scenery, indeed, must be true to Nature and effect, else the results cannot possibly prove satisfactory." Again, speaking of the lines of infinity and mass, whatever those may be supposed to mean, he says in his chapter on "General Observation for Beauty," "These lines should be used according to the natural formation of the ground to be beautified. No straining should be attempted to give more than is natural to the place, in just proportion of feelings, for there are plants of infinite characters which will beautify either small or large effects. Thus, the line curving concavely, in all its various forms, towards the individual, gives material to the mind; and the line curving convexly, or from, gives him occasion for thought. Thus the beauty of each character, in its development, gives either its material or thought to the mind." The latter part of this quotation might, we think, be more plainly and common-sensely defined, by saying, that the concave line and the objects of which it is composed, present to the eye the line of present enjoyment; the convex line, on the other hand, represents the line of prospective or future enjoyment. Again, speaking of the planting of shrubs with reference to outlines and masses, we quote the following: "Although these two effects of vegetation—outlines and masses—produce an impression, more or less, on every person, for you cannot pass a shrub or tree, even buried in thought, without receiving an invisible influence, communicated by their masses and outlines, yet the details must have one's particular attention before one can see them. But the subjects that surround you guide your path and meet every view of your eyes, shedding an influence over your life, such as every person is not aware of; therefore, the general outlines and massing of vegetation should be carefully adjusted, and, on these two features of character I will venture to give a few remarks." These are followed up by detailed mention of some shrubs, including Hollies, Yews, and Rhododendrons, with special reference to their outline and mass peculiarities; concluding with a list of miscellaneous evergreen and hardy shrubs, he finishes as follows. "Much of the art of arranging vegetation consists in placing the character of the plants planted into harmony suitable to the scene intended to beautify," which sentiment we hope our readers fully appreciate and understand, in which case we can only plead that they have the advantage of us. These quotations, will, we think, amply exemplify the style which the author has unfortunately adopted, and fully confirm the correctness of our opening remarks. Yet, though this style unmistakeably pervades every page of the book, there are passages occurring here and there that indicate a poetic mind and one capable of appreciating Nature; in illustration of this, take the following as a sample:—"There are various natural scenes which show forth beauties from early spring till latest autumn without any assistance from art. Some old Hawthorn hedge, for example, will display a pleasant bordering of early Primroses and Violets, and, when May arrives wraps itself over with fair sweet flowers. Then the wild Rose peeps forth with her lovely delicate buds, and in autumn Rose and Thorn alike vie with each other in bright array of scarlet fruitage, a perfect delight to look at, yielding a regale for birds in requital of their songs. Yet many a scene would manifest results not less charming than these, would we only avail ourselves of Nature's guidance, but led astray by

* "Landscape Gardening for Perpetual Beauty." By J. F. Johnson, Curator of the Royal Botanic Gardens, Belfast. Belfast: C. Aitchison.

technical principles, we fail to understand and miss the pleasures which otherwise we might enjoy." Here we are at one with our author, especially in the latter part of the quotation, which appears to militate strangely with the general feeling as expressed in the work before us, consisting, as it does, almost entirely of an enunciation of those vague technical principles, which he himself thus condemns—less of them and more of Nature, and the power of appreciating Nature ought to constitute the stock in trade of a landscape gardener.

Turning to the chapter on "Town parks," we were much disappointed to find that little more than a single page is devoted to this subject. Surely the importance of additional park accommodation, and the equal importance of turning those that are in existence to the best account, might have formed subject matter for a lengthy dissertation—nay, more, we think, our author might have found therein illustrations accessible to all—of those grand principles which he wishes to impart to his readers, and thereby have verified the old saying, that "an ounce of practice is worth a pound of theory." In speaking of trees for town parks, he appears to ignore the Platanus, giving prominence to Robinias, Birches, and Maples, none of which are, for one moment, to be compared to the former as town decorative trees. The concluding chapter, devoted to "the Pinetum," consists of about three-quarters of a page; and out of the long array of Conifers—not all of which, we admit, are valuable, from a picturesque or economic point of view, but, nevertheless, many are—our author's brief summary under that heading consists only of *Pinus austriaca*, *Abies* (which, he does not say), *Cedrus Libani* and *Deodara*, *Pinus Sabiniana* and *excelsa*, *Taxus baccata fastigiata*, and *Picea nobilis*! Where are all the goodly array of *Araucarias* (not, we believe, once mentioned in the book), *Sequoias*, *Taxodiums*, *Junipers*, *Cupressus*, *Thujas*, *Libocedrus*, *Retinosporas*, &c. Should this work of Mr. Johnson's reach a second edition, we would strongly suggest a limitation to broad and oft repeated platitudes, that refer, in the most indefinite manner, to everything in general and nothing in particular, and an extension of the subjects of these two chapters. Parks and town decoration are the order of the day, and most certainly belong to the proper sphere of landscape gardening, not architecture, to which fact Leicester Square, as modernised, bears ample testimony; and Pinetums are yet in course of formation, and have not become things of the past, as our author's cursory allusion to them would lead one to imagine.

The work is illustrated by eleven plates, or, more properly, diagrams. These, to some extent, help to explain the author's meaning, but they are far below the standard which the art of wood engraving has now acquired. We cannot leave this book without quoting a paragraph from the introductory chapters that we think, as proceeding from a young author, might well have been excised from the manuscript by the pen or scissors of "the learned friend" before alluded to. It is as follows:—"Much mischief, undoubtedly, is often unwittingly done by bookmakers who dish up other people's brains in such a fashion that, so far as horticulture is concerned, one might as well read a romance as peruse their writings. Disgusted with plagiarism, many give up reading on these subjects altogether, and thereby lose what might prove beneficial, along with what is otherwise. It is, however, very possible to re-discover a truth that was known before." Such a sweeping and ill-natured condemnation would have been much better omitted. No doubt Mr. Johnson himself has re-discovered truths that were known before—aye, and that were clothed in much more intelligible language than he has disguised them in, long before he was born. Considering the many curiously involved ungrammatical and hopelessly meaningless sentences in the book, we are surprised to learn, from the preface, that Mr. Thomas Moore, of the Chelsea Botanic Gardens, has looked over the proof sheets. Yet the book abounds with such sentences as the following: "*After that the spirit is placed in the material of beauty, observation may be made on parts of its diversification!*" (p. 31). "*In beauty, form and colour are one; its form giving you Nature's character for the present and future; while its colour tells you its permanent impression on its light pleasant thoughts*" (p. 109).

TOWN WINDOW GARDENING SOCIETIES.

In London, Hull, and elsewhere, societies have been formed to encourage window-gardening, and wherever the beneficial influence of such societies has been exerted they have done much good. Many a dingy home has been made all the brighter by the plants grown in them under the fostering influence and encouragement of such societies. Nor has it been essential to the happiness of the owners that a high standard of plant cultivation should have been set up. If only a plant will live, preserve its leaves green, and occasionally gladden its owner's eyes with a flower, then the causes for supreme satisfaction are quite ample. Now and again it is possible to meet with really well-grown plants in the homes of the very poor, and we well remember on one occasion to have seen in the window of a small house in one of our back streets nearly a dozen healthy vigorous plants which would not have been discreditable in any cottage window in the country. This by way of encouragement. There are many plants which will thrive excellently well even in the smoke of large towns, provided they receive a few extra attentions. For instance, the soil in which they are planted should be fresh and sweet, and should be renewed at least annually; the dust and dirt which will be certain to accumulate on the leaves day by day should be occasionally removed—the oftener the better—by sponging, or the rougher and readier method of sprinkling, or the more simple one of exposure to gentle rains when they fall. Then, again, plants should, on the one hand, never be over-watered, so as to convert the soil into mud; nor kept without water too long, so as to convert the soil into dust. With such means most of the more robust plants which commonly adorn cottage windows will grow and do well in those of towns. Evergreens of many varieties are well adapted for permanent occupancy of such positions; for, owing to the harder and oftentimes glossy surface of the leaves, they are hardier than most soft-wooded plants. The Cactus family, again, and many of the succulents, will for a long time bear up against rough usage and neglect, and the other adverse circumstances attendant upon town gardening; and their uncommon styles of growth, and flowers quaint and strange in appearance, invariably produce unflagging interest. Bulbs of many sorts, too, are particularly suitable to fill creditably a prominent place in a town window. We should like to know that window-gardening societies were established in all our populous towns. They would accomplish a really good work, and would encourage many who are now inert to become cultivators. The duties of the committees of management would not be arduous. They might well undertake the printing and distribution of such a code of instructions as would be readily understood by all who could read. They might purchase and distribute, at the lowest possible price, suitable plants, bulbs, &c., properly potted. They should arrange for the holding of two exhibitions every year—one early in spring, when bulbs should be shown; the other some time in the summer, for plants generally. They might also arrange for the occasional delivery of simple, but instructive addresses on plant life and plant growing in various parts of the town. They would also have to collect funds, in order to cover necessary expenses and provide prizes, which might be in money, plants, books, or useful domestic articles. To make the society as powerful as possible, it would, perhaps, be advisable to arrange for the organisation of two bodies—the one central, the other local. The local sub-committees should, perhaps, be as numerous as the ecclesiastical parishes or the municipal wards. They should be chosen by the residents in their respective districts. The central committee might consist of representative members of the local ones, one or two selected from each, with the addition of perhaps a few other persons chosen by these local representatives. The work of the central committee would be to raise the necessary funds, to settle the rules, to fix the exhibition days, and to award the prizes; while the local committees would have to work up their several districts, diffuse information respecting the objects of the society, put themselves in personal connection with the class in which the exhibitors would be found, and in other ways help on the work of the organisation. By such a dual arrangement an immense amount of work might be done, while no one person's share need be overwhelming. The connection between the localities each being represented in the central committee, would be mutually helpful, and, if well managed, the society would prove all powerful in carrying out its objects. Here, then, we venture to submit, is a plan capable of yielding admirable results, and which all classes of the community can assist either by subscription or personal work, or both. Cannot such an organisation be started (says the *Midland Counties Herald*) in Birmingham forthwith. No one need be frightened at the labours involved, or the amount of money to be raised. £100 per annum would do the work magnificently; half the amount might possibly be sufficient to start with, and to do it fairly well. The writer of this article was, not very long ago, instrumental in setting on foot in a large town in Lancashire, a small but successful society of this kind.

THE FLOWER GARDEN.

COW-PARSNIP-LEAVED MONTAGNÆA.

(M. HERACLEIFOLIA.)

THIS, one of the most stately of all half-hardy plants, has been rescued from obscurity to decorate our sub-tropical gardens. It is readily propagated by means of cuttings made of the root, inserted in pans of light sandy soil placed on a genial bottom heat. The plant itself grows rapidly if planted in a deep, rich, moist soil, in a sheltered situation, often attaining a height of from 10 to 12 feet in a single season. Its great cut leaves, which measure from 2 to 3 feet in length and about 2 feet in breadth, droop gracefully on all sides. It is useful as a conspicuous central object in a group of outdoor foliage plants, such as Yuccas, Solanums, Tobacco, Pampas Grass, Reeds, and Grasses, while it also makes a stately and noble object planted out in a cool conservatory along with other more tender foliage plants and Ferns. Our illustration is a representation of a well-developed specimen of this plant, which is well worth a place in all gardens, either massed along with other robust-habited plants, or planted singly in sheltered portions on the lawn or pleasure grounds. B.

NEW HARDY BEGONIAS.

I HAVE now in bloom three new seedling hybrid Begonias, raised by M. Lemoine, of Nancy, from whom I received the tubers in a dormant state in the month of April. They are named respectively Rubens, Velours, and Leviathan; the two former resemble *Intermedia* in habit, sending up a stem about a foot in height, and producing flowers in profusion from the axils of the leaves. The flowers are produced in bunches of three, composed invariably of a male in the centre, with a female on each side; the centre flower is much larger and finer than the side ones, but, unfortunately, usually drops off as soon as ever the female flowers are fertilised, thus seldom remaining on the plant more than a day after opening, though the female flowers remain in beauty for several days. The flowers of Rubens are of a fine carmine-blood colour, and the blooms of that variety are a size larger than those of Velours, which, however, is a shade deeper in colour than the former variety. Leviathan, much the strongest and most vigorous-growing of the three varieties, closely resembles Veitchii in its habit of growth, and produces its fine bright fiery orange blooms, on tall foot-stalks, well raised above the foliage. All these fine hybrids were raised by M. Lemoine by crossing B. Veitchii with Pearcei and cinnabarina. I also received from Nancy, at the same time, bulbs of three other varieties of Begonia, named, respectively, C. Glijm, Mastodonte, and Camoens, the first named failed to grow; the latter being small weak tubers have not yet bloomed, but the last-named will, I think, produce a

bloom or two before the end of the season. The rare and beautiful Begonia octopetala, from the Peruvian Andes, is now coming into bloom with me, planted out in the open garden in the same bed with the other varieties, and without any kind of protection whatever. Its leaf-growth is most healthy and vigorous, resembling small Rhubarb leaves, thus showing that this fine variety is quite hardy in this climate in summer, and in no wise requires the temperature of the hottest part of the stove, as stated in the account of the plant in the "Botanical Magazine," vol. 64, when the plant flowered in the Glasgow Botanical Gardens late in the autumn of 1836, the result of this over-kind treatment being the destruction of all the bulbs sent over from Peru, and the loss of the plant to European collections till re-introduced by Messrs. Fräbel, of Geneva, in the spring of this year. W. E. G.



Montagnea heracleifolia.

AUGUST FLOWERS IN HYDE PARK AND KENSINGTON GARDENS.

THE excessive care taken of some of the flowers planted on the bedding and ribbon-border system has been so judicious, and the watering so copious, that, in spite of the utter failure of the bedding system in most places, it has been comparatively successful this season in Hyde Park and Kensington Gardens. The small flower garden about the cottage in Kensington Gardens, which for many years has been so richly filled with masses of colour, is this season quite ablaze with brilliant hues. The devices are so good, and the plants composing them so closely grown and profusely flowered, that all London devotees of the bedding system should hasten to see them before the early autumnal frosts begin to nip their beauty. The mixed borders, along what is popularly known as the flower walk, have received nothing like so much care. The fact is, that most gardeners devote their chief attention to the close bedding system, which produces showy effects with little effort. This is a source of regret to those who prefer the natural to the artificial in garden effects, as it leaves the general public to imagine that a mixed border, as rich in masses of colour as a geometrically-arranged bed, is simply an impossibility. This is a great mistake, for picturesquely-irregular flower masses, either on open lawns or in front of shrubberies, might, with half the care and expense devoted to the geometric system, be made equally rich, and far more various in effect; for the bedding system, as at present practised, confines the gardener to a very small list of plants to select from, as, for instance, Pelargoniums, Verbenas, Calceolarias, Lobelias, and about half a

score of other things, which, on account of their compact growth, lend themselves to the system. A mixed border, or mixed lawn bed, on the other hand, is susceptible of an immense variety of treatment, by means of plants of countless kinds, and endless and striking deviation of form and colour. To effect this, however, with all the beauty of which the system is capable, necessitates much study, and that of a higher kind than is required to close-pack rich effects in geometrical devices. It also requires much more extensive knowledge of plants, and such pictorial taste as is required for painting a landscape on canvas. Painting natural landscapes in living flowers, in the highest style of

which the art is capable, requires, perhaps, even a wider range of artistic knowledge than that of the painter, though of a strictly special kind.

Leaving Kensington Gardens, and keeping the western bank of the Serpentine, the rock-work is reached; this feature of the park-gardening appears to be in a somewhat neglected state. The rock masonry itself is improved, by being much more completely clothed than it has been with trailing plants, such as Ivy, Periwinkle, St. John's Wort, Saxifrages, and other more or less suitable plants; but dead bushes require clearing away, and other rock-growing shrubs planting to fill gaps. Along the front there are many small compartments which are needlessly empty; but advantage should be taken of that circumstance to prepare for the sort of spring display for which such spaces are calculated. Cyclamens, the hardy kinds, might, with proper care, be made to do well. Squills of various kinds, and common Blue Bells, both blue, white, and lilac, would tend to make this rock-work very gay in early spring; to say nothing of Hepaticas, blue, white, and pink. It does not seem, too, that either Wallflower or Antirrhinum seed has been scattered in places decidedly favourable to their growth. Young Wallflowers should be now strong seedling plants *in situ*, which in due time would make a splendid show of colour, and fill the air with delicious perfume. There are, also, several kinds of Lilies which delight in establishing themselves permanently among the interstices of rock-work. About the narrow wending water the ground is kept in excellent order; and its slopes and well-grown trees, of various kinds, render it very attractive. There are, also, some beds of flowers on the bedding system, which, from being partially shaded, and near the water, have defied the drought, and are in very luxuriant bloom; their excessive formality, however, produces anything but a natural contrast with the irregular character of the ground and foliage among which they have been placed. In this spot, without interfering with the plans adopted in other parts of the park, experiments of a natural kind of bedding out might be tried, distinct from the ordinary geometric system. For instance, let the beds be of excessively irregular and natural form; let them, in some cases, run down to the very water's edge; in other cases let them lose themselves among the trees. In filling them with the usual bedding plants, let these be placed in irregular masses, in which they might be supposed to have sprung up from seed. Let a couple of well contrasted colours predominate—massive irregularity—not indiscriminately mixed, but each having one or two stragglers, but not more, of the other kind, capriciously breaking a too monotone character; then let the other spaces, all irregular, be filled with smaller masses of striking colour, broken in one or two places, but not more, with solitary touches of the predominating colour. Here is a suggestion for a new kind of bedding, which would blend harmoniously with the slopes of irregular ground, or an irregular distribution of trees and shrubs. The lawns and flower-beds, which form such a vast improvement in that part of the park which lies between the southern, or rather south-eastern end of the Serpentine and Apsley House, are in very fair order; but their extent has prevented that copious supply of water, which, alone, could have preserved them quite intact from the effects of the excessive heat and drought of the season. There are good effects produced among these large lawn beds by the use of tall-growing semi-tropical plants, distributed sparsely among the masses of Cannas and other plants which are grown more for their luxuriant foliage than for their flowers. One expanse of the kind, varied by tall sprays of *Ficus elastica*, has a very pleasing effect; and there are many other combinations, produced by means of less known plants, which are equally successful.

The series of geometrical masses of flower-colour which stand the whole line facing Park Lane with expanses of crimson, purple, scarlet, pink, yellow, blue, and many intermediate hues, are, on the whole, successfully managed this season. Profuse watering has preserved them from the effects of drought, and the plants, with the exception of the Calceolarias and Verbenas (which are this season comparative failures everywhere), appear just now in robust health and extremely profuse bloom. The walk between these masses of flowers is evidently a favourite resort, and its present high state of keeping is certainly a boon to the population of London. Two or three advantageous innovations upon the extreme regularity of the system may be noted. The dazzling scarlet of some of the Pelargoniums with variegated foliage, is both heightened and varied in a neat and pleasing manner by the introduction of a few detached specks, as it were, of *Viola cornuta*, the pale but bright purple blooms of which, sparkling here and there, have a most pleasing effect. Another good effect of an analogous, but more striking kind, is where a bright green-foliaged plant, mottled with yellow, is dotted sparingly among the velvety crimson masses of the gorgeous *Coleus Verschaffelti*.

AN AMATEUR.

Herbaceous v. Bedding Plants in 1874.—Many will be astonished at the statement (p. 118) that Mr. Pearson, of Chilwell, considers that the present season has shown the superiority of the bedding system over the mixed border. Here, at least, it is exactly the contrary. All things planted out since the 1st of May have had a hard struggle for bare existence, except in cases where there was a ready access to a plentiful supply of water. Well-established perennial plants have alone succeeded. Some of these have done very well, and most have done fairly, except Phloxes (a very thirsty family) and Lilies. The latter have been stunted in their growth, except the old *L. tigrinum*, which I never saw better. There is one class of plants which is too much neglected (and which ought to form a portion of every mixed border), which deserve especial notice this year; I allude to flowering shrubs, which have, in almost every instance, flourished well; Yuccas, too, have been in great beauty.—HENRY H. ELLACOMBE, *Bitton Vicarage*.

Spiræas for Forcing.—*S. japonica* is decidedly the best of all the Spiræas for forcing, and it is also one of the most beautiful of pot plants. This is the opinion of Mr. Herbst, of Richmond, who supplies Covent Garden with the earliest plants of it. *Spiræa filipendula* has been tried, but although it produces pretty white flowers, they are useless when cut, as they do not last any time. *S. palmata*, he says, has the same fault, and, moreover, does not force well; and he also dislikes *S. callosa*, the flowers of which, although very pretty when seen from a distance, have, when closely examined, a coarseness about them that detracts from their value; besides, the blooms on the lower portion of the branchlets of the spikes begin to fade before those at the end have expanded.—W.

How Moss Roses are grown for Market.—Moss Roses are largely grown for the London markets; they thrive pretty well under trees, and are very hardy and floriferous. Light, rich, and deep ground suits them best. Two rows of these Roses are generally planted between Currant and Gooseberry bushes, about 2 feet apart, but as suckers speedily make their appearance, all traces of rows become lost, and the result is a broad band of Roses, some 2½ or 3 feet wide, occupying the central space between the bush fruit. Under fruit trees where no fruit bushes exist, they are grown in lines 2½ or 3 feet apart, and interspersed with sprouting Broccoli, Brussels Sprouts, Potatoes, or Shallots, and they are also grown in the open ground, about the same distance apart. After they have done blooming, and have made good wood, they are layered on both sides of the rows, and in October, or any time between that and the following March, the layers are lifted, and after their roots have been dressed, and their tops shortened a little, they are planted out in permanent rows from 2 to 3 feet apart, or if space is scarce at the time, thickly in rows a foot or eighteen inches apart, where they remain for twelve months before being finally planted out. They are pruned very closely in winter, and in spring they begin to form flower buds, almost as soon as the leaves make their appearance. It is the buds that are gathered for market, the blooms never being permitted to expand. In hot summers, and indeed, whenever convenience permits, the space over their roots, 2 or 3 feet in width, is mulched with litter, which saves them from drought, and also acts as a stimulant.—F.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilium auratum.—One of our customers, writing on the 4th inst., says, "My plants of *Lilium auratum* have been very fine this year, having produced stems from 6 to 10 feet high and blooms varying from twenty up to nearly a hundred on a root; some blooms measuring nearly a yard in circumference."—A. W.

Yuccas.—These have been particularly fine this year. *A. Y. recurva* in my garden has been looking perfectly beautiful, its panicles of creamy-white blossoms being unusually showy; and I am sure that all passengers who have stopped at Liss station must have noticed some remarkable *Yucca* bloom in a small border adjoining the platform; but, as you justly observe, *Yuccas* should be grouped to obtain the best effects which they are capable of producing.—H. G. WATNEY.

Bravoa geminiflora.—You state (p. 92) that this plant succeeds well treated as a half-hardy pot plant. Some of your readers, however, may have found, like myself, that success in making it flourish is far from easy. I would advise them to try it as a hardy plant. I have had it for some years, and never could do anything with it in the greenhouse; but last autumn I planted it in the open ground, and this year it has come up very strong and healthy, and flowered well.—H. N. ELLACOMBE, *Bitton Vicarage*.

Lasting Sweet Peas.—If properly grown, Sweet Peas will bloom for months; failure arises from poor soil, sowing too thickly, and not allowing a well-developed growth. To keep up the bloom, these pods must be promptly removed, as the growth and ripening of seeds would exhaust the strength of the plant. By this process they will bloom all summer and until frost. The soil should be rich, deep, and moist.—Q.

Great White Thrift (*Armeria cephalotes alba*).—This is now blooming beautifully in the Wellington Road Nurseries. It is a handsome robust-growing perennial, which, when in flower, is very effective. The blossoms are pure white, and are borne in large roundish heads on erect stalks. It is a plant which will, doubtless, succeed well in warm positions on rock-work and in well-drained mixed borders in deep sandy loam.—M.

THE FRUIT GARDEN.

BUSH FRUITS IN MARKET GARDENS.

IN market gardens as in nurseries, bush fruits are propagated by means of the finest of the prunings of the young wood saved at pruning time for that purpose. They are collected, tied into bundles, or laid in by the heels loosely in bundles until the whole of the pruning has been finished. They are then lifted and made into cuttings about 10 inches or a foot in length. All buds on the lowermost half, or as far as they are intended to be inserted in the ground, are removed; for if left untouched, they would produce suckers that would ultimately prove troublesome. The ground for their reception being trenched and manured, they are inserted firmly in lines about a foot apart, and 2 or 3 inches asunder in the rows. Sometimes the cuttings are put in as the ground is being trenched. The first spring Lettuces are generally grown amongst them. In some instances, too, the cuttings are inserted in a line along the base of a wall, having an eastern or northern aspect, and about a foot from it. Both Gooseberry and Currant bushes are also increased by means of layers. In March, whole rows of bushes are layered, somewhat young and supple branches being selected for that purpose; their points are cut off, and the branches are kept in the ground by means of wooden pegs, slightly covering the portion layered with soil. When they begin to grow, shoots push from every joint, and no sooner have these young shoots attained a length of 6 inches or thereabouts than they receive another good earthing up, which is done by loosening the soil in the alleys, one man making it quite fine with a spade and throwing it into the centres of the bushes and over the layered shoots, whilst another spreads it regularly with the hand, so as to cover the base of the shoots to the depth of a few inches. In this condition they are allowed to remain throughout the summer, receiving no further attention beyond that of keeping them free from weeds. In October, or any time between that and the succeeding March, the layers are lifted, cut up into pieces, leaving two or three shoots on each; and transplanted in nursery lines, in which they are allowed to remain for another year. They are then lifted and transplanted to their permanent quarters, and all surplus stock is sold. Market gardeners generally grow their fruit bushes under trees where they are liable to many disasters, such as becoming overrun with Lichens, broken, or choked, on account of too much shade; and the reason why plants having two or three branches springing directly from the root are best, is, that if they happen to lose a limb, still one or two sound ones remain; while, had there been only one main stem, all would have been lost, and a fresh plant would have been necessary.

F.

THE WILD PLUMS OF TEXAS.

ON reading Mr. Thompson's interesting letter (see p. 110) describing the wild Plums of the Kansas plains, I was reminded of the wild Plums of the Texas prairies, which, during a residence of ten years in that state, I had frequent opportunities of observing. As in Kansas, so in Texas, the favourite habitat of the wild Plums is at the head waters of the rivers; but I found them only in the most fertile soils, never in the sandy regions. I am of opinion that the Texan and Kansan Plums are of the same species, as I traced them through the Indian territory, close to the border of Kansas; but I do not think, as Mr. Thompson would appear to indicate, that the dwarf and tall are the same, and that the difference of habit is attributable only to difference in fertility of the soil in which the plants happened to be growing. I found the dense thickets of the dwarf or bush Plum (Hog Plum the Texans call it) invariably in the richest soil, and in moist localities of the open prairie, whilst the tree Plum, attaining a height often of 20 feet, as invariably locates itself in the midst of a grove of other trees, affecting rather the outskirts than the interior of such grove, and of which, by its white blossoms in spring, and its brilliantly-coloured fruit in summer, it forms the chief adornment. But the fruit of the Texan Plum, whether tree or bush, is far below the Plum of Kansas, as described by Mr. Thompson, in the important qualities of size and flavour. The fruit of the bush or Hog Plum resembles a May Duke Cherry in size, colour, and form, but in flavour it is not very much better than our common Bullace. The fruit of the tree or grove Plum has great beauty of exterior, glowing in all the brightest hues of scarlet, orange, and yellow; but in size it is

not bigger than a good Gooseberry, and although not unpleasant to the taste, and largely used by the settlers in making preserves, has far too much acidity to bear comparison for a moment with cultivated English varieties. Assuming the dwarf species to be a bush, and to remain so under any circumstances of probable culture, there remains only the melioration and enlargement of its fruit by that process of careful selection so well understood by the painstaking pomologist, to make out of this now insignificant Plum, in a few years, a valuable contribution to our fruit gardens and orchard houses.

The Torbay Nursery, Torquay.

J. H. MORGAN.

FORCING STRAWBERRIES.

THE potting of Strawberry plants, and the size of the pots in which they are put, are important matters as regards forcing, and are, in fact, next to the securing of early runners, the points upon which success hinges. It should be known that the thorough maturation of the plants is essential to success. The runners should be potted in time to fill the pots with roots before the end of September. No plant can be depended upon to produce fruit that is not in this condition, for while they have room to grow they will not ripen their buds perfectly. I like to see the roots almost bursting the pots, and just in that matted condition that you might turn the plants out of the pots and pitch them about like a ball without breaking them. Different varieties, of course, require different sized pots; but on no account should 6 in. be exceeded, and 5 in. will be found a proper size for general purposes. Six-inch pots should be used only for the strongest growing kinds, and for these only when they are potted early in the season—say between the middle and the end of July. The longer potting is delayed the smaller the pots should be. It must be remembered that a plant potted at the beginning of August has little more than six weeks to complete its growth and cram the pot with roots. I never reckon on any real growth after the middle of September. Chilly nights then begin to check their progress, and the leaves get less and less in size till growth ceases. The beginning of August sees all our plants into their fruiting pots from the Strawberry bed, for I always layer the plants in ridges of soil from which they are transferred to the fruiting pots at once. For Black Prince $4\frac{1}{2}$ in. and 5 in. pots are used, 5 in. pots for Prince of Wales and Haricart de Thury, and others. Strawberries should always be potted as firmly as can be done with the fingers and thumbs. About $\frac{1}{2}$ in. should be left for watering, and when newly potted they should be set closely together, to shade one another's roots until they are established and grown a bit, when they may have more room. I find a goodish sprinkling of Standen's manure (which is a kind of concentrated bone-dust) mixed with the soil, to be an excellent and immediate stimulant. Some of the best forcing Strawberries are so subject to mildew when forced, that many dare not grow them for forcing at all. Among these, Black Prince, acknowledged by all to be one of the earliest, most prolific, and easiest to force, is about the worst. I have so often heard of its being given up for that reason, that a word of advice at this season, when pot plants are being prepared, may be acceptable. I have forced Black Prince now for ten years, and during that time, owing to the simple precautions I always take, mildew has never given me the least trouble. I should be loth, indeed to give up this variety, for as a forcer it is a regular "fill basket;" never a single plant missing to fruit abundantly; and, though it is reckoned a small sort, the berries with me always run from about 1 inch to $1\frac{1}{2}$ inches in diameter from plants in 5-inch pots, and carrying each on an average from six to ten fruit. It is known that sulphur will arrest the mildew, but in consequence of its being applied at the wrong time, or too often, it adheres in a hardened condition to the berries, and the cure is about as bad as the disease. Now, it is rarely the plague appears on the plants to a serious extent before the berries are set; but it never fails to come then, and its presence may be detected at once by the white powdery-looking patches upon the leaves, and on the foot-stalks of the berries. This is the time to attack it, or at least to apply the sulphur, whether it is visible or not. If it is applied sooner it begins to lose effect when the berries are about half ripe, and, as the sulphur cannot then be applied, it will ruin them. The first-set berries are of course always the largest and best, and as soon as six or ten are set on each plant, and just set, then apply the sulphur. I am, of course, presuming that the earliest set plants are gathered together on one shelf, or at one part of the house. There is no way of applying sulphur so effectively as by means of the syringe, but it should first be disintegrated by mixing it in skim milk. About one pound will do a great number of plants, and it will require about one pint of milk to that quantity. Stir it well in the milk till it is thoroughly broken up, and then pour it into the water with which the Strawberries are to be syringed, and keep stirring

the water while syringing to prevent the sulphur settling to the bottom. Thoroughly deluge the plants right and left, till the sulphur can be observed on every part of them in minute particles. Smearing must be avoided, but there is no danger of this if the sulphur has been well disintegrated in the milk before using. No further application will be required after this, and the berries will swell off clean and beautiful without a speck of sulphur being visible upon them. I seldom syringe the plants after sulphuring, as it would wash the sulphur off. If the plants are well watered at their roots, and the house damped on bright afternoons, syringing will not be necessary.

J. S. W.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Arches.

THERE is no prettier way of decorating a dinner-table, if oval or circular, than ornamenting it with a handsome arch, which is, moreover, by no means difficult to arrange effectively. It should, however, be remembered that, as a rule, no well done or elegant floral arrangement can be put together without a little trouble. The size of the arch itself must, as a matter of course, be proportionate to the size of the table on which it is to be placed; and, the size having been determined, next comes the material of which the arch is to consist. This should be strong wire, stiff enough to keep its form without bending, and each end should be inserted in a piece of iron or lead in the form of a large flat weight, which forms the stand. These supports should each be placed in a circular zinc pan, and packed in with damp silver-sand to keep them firm. Means are thus provided for having a group of flowers at the base of each end of the arch, which, together with the zinc pans, should be painted green. The shade of green selected should be as near as possible that of the Ferns usually arranged round the edge. The next thing to be considered are the creepers with which the wire arch is to be covered. Of this class of plants there is such a variety (some hardy, others tender) that it would be impossible for me to enumerate all that are suitable for the purpose. I always use two plants of the Creeping Fern (*Lygodium scandens*) for arches. Each plant is turned out of the pot in which it is growing, the soil is shaken from the roots, and it is replanted in the zinc pans of sand. This is a better plan than cutting off the fronds and inserting them in the sand, as, not being cut, they remain fresh for a much longer period than otherwise they would do. Through the *Lygodium* sprays of *Lapageria rosea*, or its white flowered variety, may be twined with good effect. On the centre of the table, under the arch, a pot plant is often placed, but I like best to see a small stand of flowers in that position; it must, however, be small, or it will detract from the effect of the arch. For this purpose, a small-sized flat tazza, with a trumpet rising out of the centre is best. Were I about to arrange a table in this style, say in the month of June, I should select the following flowers:—Round the edge of the tazza I should arrange, lightly, fronds of *Pteris serrulata*, in the tazza itself some blooms, say two Pink Cactuses, the same number of Water Lilies, a few sprays of Pink and White *Rhodanthe*, and four fronds of Maiden-hair Fern. Down the trumpet I should twine a spray of *Lygodium scandens*, and in the trumpet itself I would put a plume of wild Grasses, *Rhodanthe*, and a few fronds of Maiden-hair. The arch I should cover, as I said before, with plants of *Lygodium scandens*, and in the pans, I should arrange some of the flowers just named, with the addition of a few half-open Rose buds, blue Forget-me-nots, or any other suitable flowers which may be at hand. Round the centre vase might be placed a few specimen glasses, each containing a Rose, bloom of *Eucharis amazonica*, &c., each backed by a Fern frond. In some cases a plant is set under the arch, let through the centre of the table, and at the ends of the arch growing plants are often placed in the pans, instead of cut blooms. Those who do not have glass houses in which to grow *Lygodium scandens* or other creepers of that kind, might use in their places young shoots of Ivy, Japan Honey-suckle, or a spray of Passion-flower, and fill the pans or trays with whatever garden flowers are obtainable. It is useless for A to say to B, you should use so-and-so, and place this next to that, as perhaps B may not possess half of the plants

named by A. What, therefore, I wish to describe is how this style of management would look best, should the flowers recommended be at command.

Decoration Without Stands.

This also deserves attention, as one gets tired of getting up the same stands day after day, and unless one has a very long purse, indeed, vases cannot be constantly dressed afresh with flowers; I have therefore, had to manufacture (if I may so term it) stands of my own, the foundation of which is often a common soup plate, which if properly managed makes a charming stand. If I have friends at dinner, I use three plates; if for every day use only one. Let us first take three plates, which being obtained, the next important matter is to procure three nice plants to stand in them. That for the centre should be much taller than the others, say a nice Palm, the others being *Adiantum cuneatum*, one of which should be set at each end, an arrangement about as good as any that could be made. Having placed the pots in the plates, they should be packed in with damp silver-sand in the form of a mound, so as to hide the pot; the surface of the sand should then be covered with fresh wood Moss, or better still, if you have it, growing *Selaginella denticulata*. This done, the next thing is the arranging of the flowers, which I have done myself as follows; but it must be remembered that it was for a dinner by daylight, as many of the shades, if subjected to artificial light, would have lost their beauty. The pot plant which formed the centre piece, was a well grown *Cocos Weddelliana*. Round the edge of the plate I had a wreath or fringe made of the fronds of *Pteris serrulata*, interspersed with a few leaves of *Cissus discolor*. Round the base of the plant were then arranged Gloire de Dijon Roses, Christine Pelargoniums, Pink *Rhodanthe*, some sprays of *Iresine*, and a few fronds of Maiden-hair Fern. The two end plants consisted of *Adiantum cuneatum*, and round their base I had some more blooms of Gloire de Dijon Roses; in place of the Pelargoniums, I had sprays of *Bougainvillea*, and I substituted some young brown shoots of Roses for the *Iresine*, finishing off round the edges with fronds of *Pteris tremula*. With reference to the single stand, it was dressed in March and was very effective by gas-light, to which, of course, at that season it was subjected. The pot plant which I employed on that occasion was *Pteris tremula*, and round its base I had white Primulas, scarlet Geraniums, and Begonias, Snowdrops, and Maiden-hair Fern, while round the edge were different varieties of Fern fronds. Sometimes the centre piece is a March stand, which, some think, looks better than the three alike; at all events it forms a change, and where this arrangement is adopted a quantity of wild Grasses and Horse-tails may be used in the centre piece, as well as in the end stands, with good effect. Nothing, indeed, tends to give such a light appearance to an arrangement of this kind, as plenty of wild Grasses intermixed with the flowers employed. In the end stands, Lily blooms take the places of the growing plants, and if the soil be kept damp, they will retain their freshness for a long period, *Lilium lancifolium*, both white and crimson-spotted varieties, are well suited for this purpose, the white more especially, a colour which does not interfere with any other with which it may be brought in contact; I have also seen *Lilium auratum* used for this purpose; but, though good, so far as form is concerned, its perfume is much too powerful, and many blooms of it in a room are undesirable. As a rule, all very fragrant flowers should either be avoided, or, at least, be used in small quantities.

A. HASSARD.

***Rochea falcata*.**—This old and well-known succulent is now flowering freely in conservatories and window gardens. It has glaucous fleshy leaves, and great dense heads of bright scarlet flowers, which contrast well with the bright green foliage of Ferns and other foliage plants of that kind with which it may be associated. The plant is readily propagated by inserting fully-developed leaves in cutting pans filled with light soil and surfaced with sand. These root and form little plants in a few weeks, and may then be potted off singly and grown on near the light. As a window plant, it has few equals when in flower, and it is always interesting as an indoor decorative plant. The secret in its culture is getting it to bloom in a dwarf state, and this is done by fully exposing the young plants in a sunny window or on a shelf in the greenhouse near the light.—B.

THE INDOOR GARDEN.

THE LEMON-SCENTED GARDENIA.

(*G. CITRIODORA*.)

THIS, perhaps the most free flowering species of the useful genus to which it belongs, deserves to be generally cultivated where choice cut flowers are in demand. It grows well in an ordinary stove, where its bushy habit, glossy green leaves, and dense clusters of flowers render it conspicuous, even among the most select of stove plants. Like all its congeners, it is readily propagated by means of cuttings inserted in a genial bottom heat, and young plants, if liberally treated, seldom fail to flower the first year. A rich peaty soil suits it admirably, and during the growing season it requires copious supplies of moisture both at the roots and in the atmosphere. Apart from its attraction as a decorative stove or warm greenhouse plant, its flowers are extremely useful for bouquets, and especially for button-holes, as they can easily be mounted on thin wires, either singly or in clusters. Like other Gardenias, this species is very liable to be infested with insects, which must be carefully looked after. Its pearly sweet-scented flowers, which are produced in winter, form a good substitute for Orange blossom, and on that account alone it deserves more attention than it at present receives. It is a native of Southern Africa.

B.

CHOICE CONSERVATORY CLIMBERS.

THE interiors of our stoves, greenhouses, and conservatories are necessarily of such a cramped and artificial character, of a style so much at variance with everything we are apt to associate with the highest type of vegetable beauty, that it becomes very desirable to drape them with vegetation, and to beautify them as much as possible without injury to the contents of the house, by placing the best climbers on such pillars, supports, or positions in the house as may be most suitable to them. Nothing can tend more to the embellishment of the indoor department than the introduction of a good selection of well-grown climbers, kept clean, and in graceful training. Some climbing plants, like the *Lapageria*, are so well known and appreciated as scarcely to require mention. My object is to add the names of a few subjects of first-rate merit not so generally cultivated. This remark, perhaps, hardly applies to *Plumbago capensis*, which is grown in nearly every garden. But how? In many old stoves it may be seen treated as a pot plant, with very trifling success, compared with what may be attained by planting it out in the conservatory. It is unquestionably the finest autumnal plant we have for a pillar in a conservatory or any large cool house, and the masses of lovely light blue it produces when in that position are

unequaled. With this *Plumbago* against a tall pillar there can be no mistake. The large class of gardeners who have to specially provide for an autumnal effect would do well to plant it, and, after taking it up the tallest pillars, to train it along the roof in wreath-fashion, if possible. In addition to the highest beauty and abundance of prolonged bloom, it has the great merit of being a clean plant, not a nuisance to keep clear of green-fly, like the *Mandevilla*, or of scale and mealy bug, like some of the *Tacsonias* and others. The treatment, too, is quite simple; cut in close in winter, and allow it to take its own way in the growing season, and thus will be secured a mass of pleasant green through the summer, and in autumn every shoot will bend down with its lovely crest of blue. It may be planted anywhere in the floor of a conservatory, or in a bed of any kind, and should be cut in with a free hand in winter. *Cantua dependens* is magnificent when planted against the back wall of a conservatory, or in any suitable position in the conservatory, and allowed to make a free full growth there. It has a fine effect trained up a pillar. It should be planted in a good free loam, but it is not particular as to soil. In South Devon it flowers splendidly on the open walls. From the great fragrance and value in winter of the flowers of *Jasminum grandiflorum*—the *Catalonian Jasmine*—this plant is well worth planting out in an intermediate house or warm greenhouse, there to afford a profusion of its flowers—of so much importance for bouquet-making or indoor decoration, or, in fact, for any of the purposes of the decorating horticulturist. *Rhynchospermum jasm. noides*, so often shown well in pots, is a fine thing to plant out in the warm greenhouse or intermediate house. It should have a nice position near the glass, and requires very little more care as to choice of position and attention, than *Cobæa scandens* or *Passiflora cærulea*, with which some embellish their conservatories. One can fancy nothing more beautiful than wreaths of this *Rhynchospermum* in a rather low position near the glass towards the front of a house, of a temperature suited to its wants. It is a sweet and beautiful thing grown in any way. Wherever there are conservatory walls or large wall-spaces in conservatories, a place should be found for the *Datura*



Flowering Branch (reduced) of Lemon-scented Gardenia, and Bloom (natural size).

or *Brugmansia suaveolens*, a noble plant when planted in such a position, and whose large white pendent flowers, popularly called Angels' Trumpets, would diffuse their sweetness through the house, even though it were as large as the conservatory at Chatsworth. A fine flower like this, which open and breathes fragrance when animated Nature is drowsy or asleep, is certain to command admiration.—*Florist*.

Nertera depressa.—It is stated (see p. 123) that this beautiful little plant is seldom to be found in nurseries. I therefore think it right to mention that I have recently seen in the Lawson Nurseries, Edinburgh, upwards of 1,000 nice plants of it, many of them—from the smallest in thumb-pots to those growing in pans—exhibiting their tiny coral berries through a carpet of green foliage. This plant is mentioned by Lindley as the most southern species of the extensive family of which it is a member.—*EDINA*.

THE KITCHEN GARDEN.

HOW FRENCH BEANS ARE GROWN FOR MARKET.

Of all market garden summer crops this is the chief; for, when French Beans appear in the market, the demand for Cabbages, Cauliflowers, and Peas begins to decline, Vegetable Marrows being their greatest rivals. With the latter, however, it is possible to overstock the market, especially if they come in large quantities at the beginning of the season; but French Beans always command a sale, provided they are good and fresh, and overstocking the market with them is almost a thing unknown; but, when large quantities of them are introduced, prices are materially affected. The Valley of the Thames is, perhaps, unequalled as regards the growth of this crop, which does best in a deep soil not liable to excessive drought, and that is made light and rich by much working and heavy manurings. As French Beans are short-livers and gross feeders, they require manurial substances of such a character as can be speedily turned to account: therefore, land that was richly manured for the previous crop—such as for Celery—and that has also been liberally dressed with short manure, such as that from Mushroom beds or old Cucumber pits for this year's crop suits them best. Newington Wonder and Negro are the principal sorts grown in the London market gardens, and, although old varieties, are reckoned to be the two best. Their productive qualities are great; for, when well attended to as regards timely picking of the pods, they continue fresh, vigorous, and fruitful for a long time, and their pods, as a rule, are less apt to turn tough and unusable with age than is generally the case with other varieties. The Black Belgian has also found its way into the market gardens; it is a good dwarf early sort, much like the Negro, of which it is considered to be a variety. It is very useful for late sowings, and for early framework. Mr. Myatt, of Deptford, prefers the Newington Wonder to all other sorts, and he has a dwarf prolific sort, with the name of which he is unacquainted, that is used for the earliest crop. The Fulham growers, on the other hand, prefer the Negro, which they grow in frames, as their earliest, main, and latest crops; but most of them now also grow a quarter of the Newington Wonder.

In Frames and Hand-lights.

The first crop of French Beans is generally grown in frames, and those just cleared of Cauliflower and Lettuce plants are the ones used for this purpose. The frames being already sufficiently filled with mould, it is pointed over with a spade, and the seeds sown, provided the soil is not cold and wet—which might easily be avoided by keeping on the sashes after removing the late occupants—in four rows under each light, and about 3 or 4 inches from seed to seed in the row. The middle of March is the common time for sowing in frames, and then the sashes may be kept close till the seeds germinate, when they should be tilted up a little at the back in favourable weather; but care is always taken to keep the sashes close in the case of cold winds, and to cover them over with mats or litter in the event of frost. As they advance they may certainly be treated more hardily, but judiciously, judging according to the weather. After the middle of May, when all fear of frost has passed, the sashes are entirely drawn off these frames throughout the day, if fine, and, as a rule, replaced at night. Beans are commonly picked from frames about the second or third week in June, or about three weeks sooner than the earliest border ones come into use. A few frames, too, are also frequently occupied by French Beans sown thickly, for the purpose of transplanting the Beans from thence to the open ground, and to fill any blanks that may exist in the frames in which the sowings for fruiting therein have been made. For the first out-door planting the warmest piece of ground or border that can be spared is devoted, and the Beans are planted therein in little patches under hand-lights. The usual way is, about the first week in April, to draw lines 3 feet apart across the border, and others 2½ feet asunder lengthways, and upon the middle of every little square thus marked place an ordinary hand-light, under which plant eight French Beans; but they must have been pretty well hardened off previously. If there are not sufficient hand-lights for the whole space to be planted, use half-bushel vegetable-baskets, which invert over the plants;

and, as they are so open to the wind, they should be covered for a time with mats. The hand-lights and baskets, being just removed from performing the same end for the Cauliflowers, are now available for the French Beans; from which, as soon as they have got a good hold of the soil and begun to grow, their protectors may be removed to fill a like office in the case of Vegetable Marrows. Great care must be exercised with hand-light Beans, otherwise they are a deceptive crop, and sometimes die off altogether, especially when nursed too tenderly and changed too suddenly, if the ground be cold and wet, and their top covering insufficient and permeable to frosty winds.

Outdoor Crops.

The first outdoor crop is usually transplanted thence from the frames, and the warmest possible position is selected for this purpose; the real time for so doing entirely depends on the state of the weather and nature of the ground. If the weather be fine, the soil moderately dry and light, and the position warm and sheltered, the plants are commonly transplanted sometimes during the first fortnight of April; but, if otherwise, they are delayed a little later. Last year Mr. George Steel had a fine plantation of early French Beans, treated as follows:—He had a long south border in front of a thick hedge, just cleared of Radishes, and this he got dug over, and lined off in cross rows at 18 inches apart, drawing the lines in the form of seed furrows with a hoe. Herein he planted, 5 inches asunder in the row, near the middle of April, Negro Beans raised in frames. They grew and promised well, until the hard mid-May frost that followed damaged them considerably; but they nevertheless recruited themselves, were earthed up in due time, and came into good bearing condition a fortnight after those Mr. Steel had growing in frames. Mr. Wm. Bagley and others erect barricades of mats in an upright position to stakes driven into the earth, and placed to the windward side of the borders; and they also surround frames containing them, but not covered with sashes, with the same protection to ward off cold and frosty winds, that are always detrimental to this crop. Sowing begins out of doors some time during the first fortnight of April, just as the state of the weather and soil permits, and the warmest available position, such as in front of a wall or hedge, is selected for the purpose. If the ground is free from all other crops at the time of sowing, there is more need for a sheltered place than if it were cropped. In sowing, the lines are drawn at 2 feet, 2½ feet, and sometimes at 3 feet apart, and the seeds planted about 4 or 5 inches asunder. The earliest crop, as a rule, is sown on empty ground, and that just cleared of Radishes, Spinach, young Onions, Broccoli, or Coleworts is what is generally used; or a piece of ground may be kept uncropped from the winter purposes for the Beans. The drills for the seeds are generally drawn with hoes in the forenoon of a fine day, and left open till the afternoon, when the seeds are sown, and some earth is drawn over them with the feet. When empty ground is not used for them, they are sown in drills drawn between lines of Cauliflowers, Cabbages, or Lettuces. These crops, instead of being injurious to the French Beans when they appear above ground, are simply beneficial to them, inasmuch as they protect the tender Beans from cold winds, and act like foster parents to them until the Beans have gained some strength and the weather becomes mild and warm, by which time the bulk of the Cauliflowers will have been removed for market. Even then, however, the French Beans do not get all the space to themselves, for no sooner is the earth cleared of the other crop than it is loosened a little between every alternate line, and those spaces replanted with Lettuces or Brussels Sprouts. Thus one space contains another catch crop while the other is empty; and, by means of having this empty space to walk in, the gatherers can pick two lines of Beans, one on either side of the empty alley, and, never disturb the other crops in the alternate alleys. Should the French Beans have come up well, and be nearly ready for picking before the first occupants of the soil are entirely removed, the alleys are not cropped again until the Beans become exhausted, when the ground is entirely cleared, and cropped with Celery, Radishes, Turnips, Onions, transplanted Leeks, Spinach, or Coleworts. The first main sowing is made on the open field about the end of the second or third

week in April, under the same circumstances as that already mentioned, or the field may have been previously planted out with Cos Lettuces in lines 1 foot, 15 inches, or 18 inches apart; between every two lines of these would be sown one of Beans, for which the rows are not drawn to a line, but merely done so by guesswork.

First Crop Failures.

Many failures of the first crop take place if sown too early, especially in the case of cold and wet soils. Indeed, in a market garden at Hammersmith about an acre and a half of good ground had been sown about the end of March, in a promising season, with French Beans at 2 feet apart, the grower being determined to be early. All seemed to prosper well for eight days, and the seeds had swollen nicely, when cold wet weather set in and the entire crop was lost; but the ground was immediately planted with Walcheren Broccoli, so the loss after all was not so great. Successional sowings are made every fortnight or three weeks, until the end of June, by some growers, but most of the large growers sow their French Beans about the 8th and 20th of April, the first and last week in May, and the first week in July, the Scarlet Runners occupying the interval. The last sowing consists chiefly of the Negro, and just yields a nice crop of young and fine pods before being destroyed by frost; whereas, were they sown a fortnight later they would be apt to be nipped when coming into bloom. French Beans are, likewise, sown along both sides of Asparagus ridges containing two or more rows in April, in single rows about 6 or 8 feet apart, with Custard Marrows grown between them; and in rows 3 feet apart, with two rows of Shallots or Onions occupying the intervening alleys. Some growers sow late crops in rows 4 feet apart, and plant two rows of Coleworts in every intervening alley. Before the seeds appear, the soil immediately over the seeds is gone over and slightly loosened with an iron-toothed rake, so as to permit of an easy egress of the seedlings. When sown in bare fields, even though Lettuces be planted amongst them, a little ridge of soil is frequently drawn to the north or windward side of them as an additional protection from cold winds. Whilst the plants are growing, they are rigidly attended to as regards keeping clean and hoeing the soil, and when they reach 4 inches in height they are earthed up a little. The catch crops, too, are cleared away as soon as they are ready, in order to give the French Beans every opportunity of a healthy development, as they are reckoned a very remunerative crop. Those grown in frames come into bearing in June, just according to how they are treated and last in good picking condition for six weeks; and those in warm borders begin to fruit in the last week of June or first week in July, and continue to yield a fair crop for nearly two months in a moderately moist season, and if closely picked. The first main crop immediately follows the border ones, and as a rule lasts the longest. Drought makes them short-lived sometimes, but in rich soils and warm moist seasons, the yield is so heavy, that it is scarcely possible to pick them as quickly as they grow. Drought too, induces red spider, with which I have seen half-a-dozen acre fields completely overrun; and, although this pest is very prejudicial to the health and longevity of the crop, there is no remedy for it. The Beans are gathered by women, who put them into half-sieve baskets, which they empty when full into larger ones; or they may put them at once into large ones, which, when full, they carry on their heads to the end of the rows, there to leave them to be carted home, where they are washed to remove the grit. They are then packed into round half-bushel vegetable baskets, which are covered with Rhubarb leaves fastened down with withes, and piled one above another on the waggons that convey them to market three times a week. The market gardeners, as a rule, save their own seeds, and a piece of the first or second main sowing is generally selected for this purpose. The plants in the rows to be saved for seeds are first subjected to two or three pickings for market; then they are left untouched until they are fully ripe, when they are pulled up by the roots, tied into little bundles, which are slung in pairs across a fence or rail to dry. Sometimes, too, the haulms are spread over sashes to dry, and in the event of wet weather they are strewed under some spare sashes, where they get well dried without

receiving any of the rain. I have sometimes seen them spread out over a series of sashes resting on frames, and other sashes laid over them again, and tilted up at back and front so as to permit of a free current of air, and here they dry readily. They are then safely housed until wintry weather sets in, when they are threshed, cleaned, and stored in rough brown paper or canvas bags, or placed in drawers, or the corner of a loft, until sowing time again arrives.—*Field.*

THE BEST DWARF FRENCH BEANS.

THE following are all useful for forcing purposes, or for the first outdoor crop; but they should be grown for such purposes only, as they are, both in size of pod and quality, less meritorious than good second-early or main-crop kinds:—

Osborn's Early Forcing.—Dwarf and compact; flowers, flesh-white; pods, short, very plentiful; ripe seed, medium length, plump; in colour, buff, heavily marked with dark red.

Williams' Early Prolific.—Dwarf and compact; flowers, large, pale mauve; pods, medium length, flaked with purple, abundant; seed, rather short, plump; in colour, buff, spotted black and red.

Dell's Kidney.—This variety seems to be in every respect an exact duplicate of Williams' Prolific. The flowers are the same, pods the same, and habit the same; but there is considerable difference in the character of the seed, which is short, round, thick, and dun-coloured.

McMillan's Early Prolific.—Another duplicate of Williams' Bean in growth, colour of pod, and of seed; but, singularly enough, the flowers differ, being of a pinkish white colour.

Carter's White Advancer.—Medium growth, less branching than the previous ones; pods, rather longer, pale green in colour; good when very young, but thickens quickly; flowers, white, good average cropper; seed, medium length, plump; in colour white. This is a good first early outdoor kind.

Yellow Canterbury.—Tall and erect in habit, pods, medium length, very freely produced; flowers, flesh-white; seed, small liver-coloured; a good outdoor first early.

Menier's First Early.—Tall and compact in habit, pods, medium length, average cropper; flowers, flesh-white; seed, nearly round, pale buff; a very good first early.

Salmon Mexican.—Stout and compact, flowers, flesh-white, pods of good length, a large cropper and of excellent quality; seed, rather long, of average size; in colour pale salmon-buff. A capital second early variety.

Newington Wonder.—Compact in growth, but with a great tendency to run at the points; flowers, lilac; pods, small, abundant; seed, very small, flat, and in colour brownish-white. This variety is one of the very latest; it is inferior to some of the other kinds.

Long-podded Negro.—Vigorous and branching; flowers, pale mauve; pods, of good length, very freely produced; seeds, flat, long, and black in colour. A most excellent main crop variety.

Cutbush's Giant Dwarf *alias* **Long Red Flageolet.**—Tall and erect in habit; pods, long, of good shape and of excellent quality, abundant; flowers, flesh-white; seed, long, large, dark red. A fine main crop kind, and valuable for show purposes.

Exhibition Dwarf, *alias* **Wilson's Wonder**, *alias* **Victoria Dwarf.**—A very distinct kind; habit, tall, branching; flowers, white; pods, very long and thin, of first-rate quality, and freely produced; seed, longish, thin; in colour, buff-white, with small black spots next the eye. This is a very fine late kind, valuable for main crop and for exhibition.

If I were asked to name six kinds out of this number suitable for general garden work, I should name Osborn's Bean for forcing, Carter's White Advancer for first sowing out-of-doors, to be followed by Salmon Mexican, Negro, Cutbush's Giant, and Exhibition Dwarf. Pods that have dark-coloured flakes upon them are, I think, objectionable.

A. D.

New Potatoes at Christmas.—For many years past I have always managed to have a few new Potatoes for Christmas. This I effected some twenty years ago by saving a few old tubers until September when they more resembled pieces of sponge than Potatoes. I then placed them in layers among damp leaf soil, when they threw out Potatoes from the eyes, instead of foliage, but the Potatoes were anything but good. After that I planted outside in July, covered up with long litter when frost set in, and dug Potatoes from open quarters; but, I must admit, that the disease often caught us napping. For these six years past, however, I have pursued the following plan and have always had new Potatoes in abundance at Christmas. After I get clear of early Melons, I dig up the soil and mix it with leaf mould, and plant old seed saved from last year, the best variety for the purpose being the Lapstone. I place the lights on the pit, tilting up both ends with bricks, so as to allow a free circulation of air. I give only one good watering, and the result is new Potatoes equal in size and flavour to those grown naturally outside. When the tops die off, I cover the haulm with dry litter and replace the lights, to keep out frost.—R. GILBERT, *Burghley.*

MOOR PARK.

THERE are but few great gardens within a short distance of London that are better worth a visit than those at Moor Park, while the old historical associations of the place give it an additional charm. The park itself consists of about 500 acres of gently undulating ground, and this diversity of surface makes one think that it is much more extensive than it really is. It contains some splendid old Pollard Oaks, with rugged trunks, varying from 20 to 30 feet in circumference, the tops being as fresh and as healthy as in specimens only a century or two old. Of the Scotch Fir, too, one of the most characteristic of trees for park or woodland scenery, there are some fine specimens, with enormous stems and great flat heads. They are judiciously planted in clumps or irregular masses, and so treated, have a far more striking effect than when dotted indiscriminately all over a domain, so as to become monotonous. The rising ground in the park affords capital standpoints, from which extensive views of the surrounding country may be obtained, more especially of Harrow and Watford. The pleasure grounds were laid out by "Capability Brown," and slope gradually from the park to the mansion, which stands on a spacious plateau in the valley. The lawn is pleasingly diversified by some splendid Conifers and masses of Rhododendrons, that have long ago outgrown their original boundaries, and now ramble unrestrained over the fresh velvety turf. Masses of dark glossy-leaved Portugal Laurels, judiciously interspersed, here and there, also give to the whole a pleasing appearance; of Cedars of Lebanon there are also some remarkably fine examples, and a Spruce Fir is said to be one of the oldest and largest in the country; it has several massive trunks forming in themselves a little grove, the roots rambling over the surface of the ground, interlacing and forming in some places a perfect network. At a distance of several feet from the main trunks of this little Fir grove, another young tree has started up from one of the large exposed roots, and this promises to equal its associates in size in a few years time. Looking at the mass of interwoven roots and the group of trunks, old and young, to be found here, one is irresistibly reminded of the Banyan tree, which, by means of stem-roots, soon covers large spaces of ground, to the exclusion of other kinds of vegetation. Pinus Pinsapo does remarkably well here, one specimen of it being close on 50 feet in height, a perfect pyramidal mass of fresh glaucous foliage from top to bottom. In localities where this prospers it is one of the most attractive of all Conifers, and well deserves a place in the most select collection. The drooping variety of the Lawson Cypress forms a graceful specimen here along with the erect normal form. Adjoining the flower garden, which has been most effective even this dry summer, is an extensive and beautifully kept croquet lawn, which is not only admirably adapted for the purpose for which it has been specially constructed, but also furnishes a cool fresh expanse of mossy turf, than which few things contribute more to our enjoyment of a garden. The fine appearance of this broad velvety natural carpet is still further enhanced by a luxuriant hedge, formed entirely of the common Sweet Briar or Eglantine, which cuts it off on two sides from surrounding objects. At the time of our visit the fence was one dense mass of fresh young growth, profusely studded with delicate pink flowers and unopened buds. A Rose fence, or hedge of Sweet Briar, should certainly find a place in every garden; for, when once well planted, they give but little trouble, and are almost certain to succeed, especially on deep rich soils. The kitchen and ball-room, which are partially detached from the mansion, jut out on to the lawn. Instead of being obtrusive, however, they have actually been made most attractive, the walls and roof being wreathed with Ivy, Virginian Creeper, Roses, and other graceful climbers, in such a way as to conceal all architectural details. A terrace at one extremity of the lawn overlooks an attractive wild garden, in which is caught delicious glimpses of natural wildness, in contrast with much that is more kempt and trim. In this sheltered spot are cool winding walks that meander amid Ferns, Heather, Grasses, and Great St. John's Wort, the great golden flowers of which shine like golden chalices amid the deep-green foliage by which they are surrounded. Great Scotch Thistles rise here in native luxuriance, and the gracefully pendent plumes of *Carex pendula* sway to and fro with the slightest

breeze. This is a native plant far too seldom seen in our gardens, a fact sadly to be deplored, as when planted by the moist spongy margins of ponds and streams, it forms an object of as much beauty and grace as the most delicate exotic. In another part of the grounds, between the terrace and the flower garden, a fine broad sweep of fresh mossy turf is nearly over-shadowed with Elms and other shade-trees, with here and there a fine large-leaved Catalpa, or a glossy-leaved purple Beech, to break the monotony of the surrounding green-tinted foliage.

The kitchen gardens are a considerable distance from the mansion, and are nearly 10 acres in extent. Moor Park is notably a fruit-growing place, and it was here that the Moor Park Apricot, one of the best varieties in cultivation, originated. The Vineries and Peach-houses are well stocked with healthy Vines and trees, most of which were bearing abundant crops of splendid fruit. When we saw them, the early Vinery and Peach-houses were over, all the fruit having been gathered; the trees were, however, not left unattended to on that account. This is the great secret of good culture; any ordinary cultivator will attend to a tree or plant in fruit or flower, but how often do we find them left to the ravages of thrips and red spider directly the last fruit is gathered, and just at the time when the partially-exhausted tree requires extra attention to enable it to recruit its energies for the production of next year's crop. A long glass wall here serves the double purpose of Peach and orchard-house, and most of the small standard trees of Plums, Apricots, and Cherries, were bearing heavy crops of fine fruit. These appliances are extremely useful to a gardener, more especially in cold exposed northern districts where, all through the winter, they can be utilised for the preservation of different half-hardy plants and vegetables, which invariably suffer if fully exposed. The Vineries are in part heated by old brick flues; but, notwithstanding this drawback, fine crops of large well-coloured bunches of Grapes are obtained annually from them. In one of the Hamburg-houses a Vine of the Gros Colman bore thirteen fine bunches. This is a remarkably fine Grape in appearance, and a Vine or two of it should find a place in every establishment. The Muscat-house is heated with pipes, and the Vines are bearing a good and even crop of fine well-coloured bunches. Peaches were this season of excellent quality, and one of the houses, just at its best, contained Princess of Wales, Noblesse, Royal George, and other standard varieties, models of successful cultivation; while Figs do well trained along the back walls. Of Pines some nicely-swelled fruit were ready for cutting at the time of our visit. In the kitchen garden Peas, Cauli-flowers, and other vegetables were abundant and of excellent quality, while Strawberries and other small fruits were producing immense crops.

Hampstead Heath.—It is now some two or more years, says Dr. Laukester, since London became possessed of Hampstead Heath, yet, with the exception of the fact that a large number of persons around the Heath have claimed and enclosed little bits of it, nothing has been done. The inhabitants of London should remember that they are now the possessors of this picturesque bit of land, and should do what they can to make it an agreeable place of resort for all classes. As far as I can see this fact has been quite overlooked. The first thing necessary to make Hampstead Heath a healthy place of resort is to have it drained. From its undrained condition it is positively in many parts malarious. Neuralgia, rheumatism, and diseases produced by undrained land are frequent amongst the inhabitants on and around the Heath. One of the wealthy inhabitants of the Heath has offered the Board of Works £1,000 to enable them to drain that part of the Heath around his house. The ponds on the Heath are gigantic nuisances. Now what is really, at present, so dangerous might be converted into a great boon for health. These ponds might be made into baths; Hampstead Heath is a favourable situation for such an institution. The North London, Metropolitan, and Midland Railways have all of them stations near the Heath, and tens of thousands from the City, Islington, Marylebone, and St. Pancras would gladly avail themselves of an opportunity of bathing on the Heath. Let the South Hill Pond be at once filled up, and the ponds known as "Two" and "Three" should be cleaned and concreted at the bottom, and a fresh supply of water obtained. These ponds should then be walled in, and proper accommodation provided for bathers. The walls need not be ugly, but ornamental, and trees and shrubs planted outside, to add to their agreeable appearance.

WILHELMSHÖHE.

THE palatial villas of the lesser princes of Germany were frequently erected in emulation of the palaces of the greater potentates of Europe, and sometimes rivalled, if they did not exceed in dimensions and magnificence, the models from which they were taken. They were, indeed, very often quite out of all proportion with the extent of the electorate, or landgravate, or principality of whose sovereign ruler they formed the state residence. Wilhelmshöhe is one of the most remarkable of the State residences of the Germanic reigning princes, and was celebrated as a noble residence, erected at enormous cost, long before the attention of the present generation was attracted to it, as the palace-prison of the late Emperor Napoleon III. It was founded by the Landgrave Moritz in the seventeenth century, and its situation among the woods which clothe the heights to the west of the handsome little city of Cassel,

especially as seen from between the columns of Ionic portico, greatly adds to the beauty and charm of the more distant objects. The designing of the artificial lake and islands certainly does credit to the whole succession of landscape gardeners who have gradually brought them to something like their present state; for the detached trees, such as those which form the foreground of our engraving, and other plantations, in which fine Conifers play a conspicuous part, help, with the lake and islands, to make a very graceful picture, in which the palace, which has no great merit except that of being built with a very beautiful white stone, plays but a secondary part; the gardeners' work having been, on the whole, far more successful than that of the architect. The great want which is strongly felt on a visit to Wilhelmshöhe is the presence of flowers, which may be antithetically said to be "conspicuous by their absence." There is not, in fact, so



Wilhelmshöhe.

sufficiently indicates that it was originally designed as a hunting seat, just as, in somewhat similar situations, the château of Compiègne and Versailles were by Louis XIII. of France. The woods about Wilhelmshöhe, at the time the site was determined on, abounded with all kinds of game, especially wild boars, of which the modern Westphalian hams still afford evidence. The situation is, in many respects, really magnificent; the height of the ground, above the valley of the Fulda, being more than 1,300 feet. The views commanded from the terrace and the principal apartments to the east, are, consequently, very fine; and, from the nature of the country seen over, very extensive, ranging for nearly five and thirty miles beyond the pretty little city of Cassel, which is situated in the plain. The nature of the scenery thus seen is extremely varied in character, exhibiting finely contrasting expanses of woodland and open country, as well as extensive ranges of hills and far-spreading plains. The foreground to the

extensive prospect which the lofty terrace commands, to speak, a single flower bed to cheer, even with a solitary mass of colour, either the western terrace or the lower ground beneath; nor are the fronts of any of the plantations anywhere lighted by those flashes of flower-colour, which, in analogous situations, often produce such artistically charming and rich effects. Till quite recently, the gardens of Versailles, and those of nearly all the great French châteaux, were open to a similar objection; but, happily, the love and knowledge of flowers has increased so rapidly of late years that in a very short time not even the cottage of the artizan, any more than the palaces of a landgrave will be open to the objection that it is without flowers. The western front of Wilhelmshöhe commands a view of the formal and extensive gardens, which are of the school which the last century delighted in. There is a grand series of waterfalls and fountains, with one especially grand cascade, the whole of the display being supplied from an aqueduct of fourteen arches, which are combined with a complicated series of hydraulic engineering work on a scale

only second to that of Versailles; and, barring the lavish addition of sculpture, which is not altogether wanting at the landgravean palace of Wilhelmshöhe, the effect produced is almost as striking. It is certainly superior, in a general character, to the cascades of St. Cloud, the machinery of which is still intact, though the palace is destroyed. The Westphalian palace of Wilhelmshöhe is, in fact, well worthy of the study of a landscape gardener; for, to be a complete master of that difficult art, the methods of past schools must be as carefully studied as the more familiar principles in practice at the present time. This is not the place to enter upon the historical associations of Wilhelmshöhe: but it should be noted, *en passant*, that it was possessed by a Bonaparte, in the character of master, sixty years before it became the abode of another of that family as a state prisoner. When Western Germany was overrun, during the first Empire, the kingdom of Westphalia was established, and Jerome Bonaparte, the ephemeral king of an ephemeral kingdom, resided, during his brief term of kingly dignity, at what was then called the *royal* palace of Wilhelmshöhe. H. N. N.

THE ARBORETUM.

SEA-SIDE PLANTING.

By W. GILCHRIST.

SOME extensive plantations have recently been formed, both in England and Scotland, on barren tracts within the influence of the sea-breeze; and our Continental neighbours have also taught us a great lesson in the indomitable perseverance with which they have overcome so many difficulties and succeeded in the planting of barren tracts and sandy wastes, where the soil was of the poorest description, and considered altogether unfit for the growth of any vegetable product. The providing of artificial shelter by forming screen-fences, sowing tree seeds, and then thatching the ground with branches; or sowing Broom or Whin seeds along with the tree seeds, so as to shelter the seedling plants, have been some of the chief causes of success, especially where the soil was light and inclining to drift-sand. About five years ago, on the west coast of Ayrshire, I saw a plantation on soil of this description. It consisted chiefly of Scotch Pine; where it was fully exposed to the blast there was not half a crop of trees on the ground, and these were either drifted up with sand, or their roots were left almost bare of soil. The trees appeared to be about ten years old, and what of them were growing appeared to be in a healthy condition. Had screen-fences been erected on the exposed parts of this plantation, there is no doubt but they would have prevented the sand from drifting so much, and the plantation would by this time have been providing shelter to the adjacent lands, and forming a very prominent object in the landscape. The soils along some parts of the sea-coast are sometimes found to be very suitable for the growth of trees and shrubs, and in such places there is little difficulty in growing any of the hardy trees, and even some varieties that do not stand the frost inland are found to grow well along these favoured shores; especially is this the case along the shores of Inverary, Lochgilphead, and Loch Fyne. This is principally owing to these places being sheltered from the cold western blasts of winter and spring by the range of hills lying between them and the main ocean. One of the most difficult situations for the formation of a plantation on the sea-coast is to be found where the ground is low lying, or rising from the shore with a gentle slope, and at the same time exposed to the full force of the ocean breeze. The difficulty can only be overcome by erecting screen-fences at such distances as will effectually break the storm and provide shelter for the young plants. These screen-fences should be erected with brushwood; the thinnings of young plantations, Broom, Furze, or anything of that description, that will make the fence open and allow the wind to pass through it, instead of passing over it, as in the case of turf or stone dykes. Some of the cheap and hardy varieties of underwood, such as the common Elder, sea Buckthorn, Willows, Sloe, Thorn, common Whin, &c., should all be used. Of course, where these or any variety of underwood is found growing naturally, full advantage should be taken of it; but where there is none, it must be provided and planted at from 2 to 2½ feet apart, so as to act as nurses to the young trees which may be planted at the ordinary distance apart. This underwood, though absolutely necessary for a number of years at the first outset, must be always kept in check, so that the trees may have full scope for the development of both root and branches. If the soil is light, with a gravelly bottom (as is often to be found on the west coast of Scotland), or dry barren sand, the kinds of trees

to be planted must be principally of the Pine tribe, such as the *Pinus pinaster*, *P. montana*, *P. austriaca*, *P. Laricio*, and Scotch Pine. Where the soil is loam or peat, with a mixture of sand, and the sub-soil inclining to clay, the broad-leaved trees may be used, such as the Birch, Elm, Pine, Alder, and Norway Maple. All these varieties of trees mentioned have been thoroughly tested along the shores of the west of Scotland, and, if properly taken care of, they will in due time form valuable timber trees for which a ready market and a high price can at all times be had. In an exposed situation, such as has been described, where the trees are planted near to maritime residences, chiefly for ornament and shelter, besides the varieties mentioned, some of the ornamental trees and shrubs may be used, such as the Laburnum, Mountain Ash, Oak, Ash, and Beech; and for shrubs, the Ribes, Sea Tamarix, Hazel, Elder of sorts, Snowberry, Privet, and common Lilac. When these have succeeded so as to provide shelter, some of the evergreens and finer sorts may be introduced. To provide shelter for these maritime residences, hedges will be found to be better than stone and lime walls; that is, unless the walls are higher than what it is intended for the trees or shrubs to grow. I have often observed that where the trees grow a few feet higher than the wall, the tops of them grow freely and are regularly furnished, while the branches parallel with the top of the wall appear as if a portion of them had been cut away. This is caused by the blast striking against the wall in full force, the wall being a resisting body through which wind cannot pass, it ascends to the top of the wall with increased velocity, and the higher the wall the greater is the force at the top, and of course its influence on plants is the more destructive. Screen-fences, composed of Brushwood, near to a residence have a bad appearance, and at the best are only temporary; but I have seen them used with good effect during the most severe winter and spring months. As before mentioned, the most effective shelter and fence for these residences is a good hedge, viz., a sunk wall or fence with the back sloping inwards, and a hedge on the top planted with Sea Buckthorn, Beech, Elder, or Blackthorn. These hedges do not altogether resist the sea-breeze, but they tend to prevent it striking with so great force on a given point, and the salt spray is very much exhausted before it passes through a good hedge, and by that time will do no harm to any of the maritime plants. Where the elevation rises abruptly from the shore and terminates in flat or table land, even though the situation be as fully exposed to the blast as the one previously described, there is little difficulty in forming plantations; for as soon as the harder varieties of plants can be got to grow on the exposed side, so as to provide shelter, any sorts of trees that are suitable to the soil will grow, as the temperature is generally higher in these situations during the winter and spring months than it is in the inland districts. In regard to the exposure of trees to the influence of the sea-blast, I consider that it is not the blast or sea-breeze, but the sea-air that is so damaging to the trees during the winter and spring months. Climatic influence acts on the vegetable kingdom as well as on the animal, and it is no uncommon thing in exposed districts of the west coast, during the prevalence of westerly and south-westerly gales, to see the windows crusted with salt like frost. When salt is in the air in such quantities as to leave its impression on the windows, it must of necessity be very damaging to the constitution of trees and shrubs. It is well known that salt used in moderate quantities is a very efficient manure, but if overdone, nothing is more damaging to vegetable life.

Causes of Failure.

In speaking of the formation of plantations on the sea-coast, reference has often been made to the failure of the plants that were planted by a very enterprising gentlemen on one of the islands of the Hebrides. But too much stress should not be laid upon the failure of that undertaking, as it was done under very adverse circumstances, and at a time when the formation of plantations was not so well understood as they are at present. The undertaking has been a success, in so far as it has proved that some trees will grow under the climatic influence of the ocean; and I have no doubt that, had the formation of this plantation been more judiciously and carefully done, it would by this time have been one of the monuments of arboricultural triumphs on the sea-coast. Some of the causes of failure may be here mentioned, such as the unsuitableness of the soil for the growth of any trees, a great part of it being deep Moss, combined with a humid atmosphere, which keeps the soil always in a damp and spongy state. Yet, in that soil and situation, *Pinus Pinaster*, *maritima*, and *montana*, trees that are said to grow best in light sandy soil, not only kept in life, but for a number of years after being planted appeared to be in good health. Of course none of the plants, except what are on the sides of ravines or some sheltered spots where the soil is more congenial, will ever come to be timber trees; but if they grow so as to provide shelter for the growth of timber trees, a great end will have been gained. Another cause of failure was

the extent of the undertaking for one season. The formation of the plantation should have extended over a number of years, beginning with the most exposed parts, and planting such trees and shrubs only as would provide shelter. As soon as shelter was thus obtained, the remainder could be planted, and even some useful timber trees might be introduced into the exposed parts, as they would then be sheltered by the shrubby sorts that were formerly planted. In the absence of this system, screen-fences ought to have been adopted, irrespective of the extent of the plantation. The packing and shipment of the plants in so large a quantity would also be against their future success; for it is a well-known fact, that even in the most favourable districts for growing plants, the shorter time they are out of the nursery ground before planting the better. Acclimation also exercises a very great influence on plants, whether they be planted inland or along the shores; but more especially would the influence of acclimation be felt on an exposed coast, or a bleak and barren island, where the soil, even at the best, cannot be said to be suitable for the growth of trees. In such a situation, to be successful in the formation of plantations, a home nursery must be established, and the plants grown from seed.

Best Sea-side Trees.

In a report on sea-side planting, for which the Highland and Agricultural Society awarded their gold medal, special reference is made to plantations that have been formed on the northern extremity of the county of Norfolk, at an altitude of from 200 to 500 feet above the level of the sea. The surface is reported as generally being poor, and the sub-soil a hard ferruginous gravel. The plants used were Goat Willow, Alder, Birch, Sycamore, Scotch Elm, and two varieties of the *Pinus Pinaster*. The formation of the plantation, including planting and fencing, is reported as having cost upwards of £10 per acre. The success of the undertaking is attributed to the preparation of the ground by trenching 18 inches deep; erecting screen-fences of Brushwood, &c., 6 feet high; carefully preparing the plants, having them well furnished with fibrous roots before planting; and having the ground cleaned by hoeing for the first two years after planting. The cost of the formation of these plantations appears to be very high when compared with plantations formed on the north coast of Morayshire by Mr. Grigor, and reported by him as having cost £232 18s. 7d. for 298 acres; or, on an average, rather less than 16s. per acre. The plants used were Scotch Pine and Larch. However, the writer states that the unusual small expense of these plantations was owing to "the ground being soft, with little or no surface herbage, rendered it suitable for small plants, which were planted by the hand-iron, by people in the vicinity much practised in the work, and who could plant an acre each daily on such ground without difficulty. The plantations were also made at a time when the price of nursery plants was under the usual rate," and also that "the expense of fencing these plantations was very small." In specifying the kinds of trees and underwood best suited for planting within the influence of the sea-breeze, our remarks must be understood as being chiefly applicable to the west coast of Scotland, and none will be recommended but what have been thoroughly tested, either along the Ayrshire coast, the shores of Campbeltown, or on the islands of Arran and Bute; and first amongst these, the palm of honour must be awarded to the *Pinus Pinaster* and its varieties. This tree was introduced in 1596, and is common throughout Europe and the shores of the Mediterranean. It is generally found in plains near to the sea, and on sandy soils of the poorest description. It has been successfully grown on the coast of Galloway, and on the northern coast of the county of Norfolk, where, as Mr. Grigor, in his "Arboriculture," states that "some of the best specimens of the tree in Britain are to be found standing nearly 80 feet high, with trunks 12 feet in girth. Many such trees stand at Westwick Park, where few other species of trees would become timber." It has also been most extensively used by our Continental neighbours in the successful formation of plantations on the sea-coast, and on large barren tracts of drift-sand, where, previous to its cultivation, scarcely any plants of a ligneous nature could be found to grow. Its accommodating nature in regard to soil and situation was also distinctly proved in the success that has attended its introduction to some of the islands of the Hebrides, where, under very adverse circumstances, and in soil entirely uncongenial to its nature, or, at best, very different from that of its native habitats, it has shown such symptoms of success as will ensure its further introduction at no distant period. On the Continent of Europe its wood is principally used for the production of resin, tar, and turpentine, and for the ordinary kinds of carpentry and fuel. The *Pinaster* has a very strong tap-root, which, in loose, dry, sandy soils, descends perpendicularly into the ground, seeking its nourishment and fixing its anchor or stronghold in a strata that is not reached except by some of the broad-leaved trees. This is a peculiarity which makes it, unless frequently removed in the nursery lines, very difficult to transplant successfully;

but this very peculiarity is what makes it, above all others of the Pine tribe, a suitable plant for barren sands and sea-side planting. It grows very fast; but is rather loose in its habit, and is very often "kneed," or blown a little to the one side; but it very rarely occurs that any of them are uprooted by the storm. One of the varieties of this tree—*Pinus Pinaster* minor, or *P. p. maritima*—is said to be hardier than the species. It is chiefly distinguished by the smallness of its cones and the shortness of its leaves, as compared with the other. It is found growing on the Continent along with the *P. Pinaster*. The next in order of rank amongst the Pine tribe are the *Pinus montana* or *Pumilio*, *P. sylvestris*, *P. austriaca*, and *P. Laricio*. The *P. montana* is of a low-spreading bushy habit; a native of Europe; abounds on the Alps, Pyrenees, and other high mountains; was introduced in 1779. It stands the exposure of the sea-breeze; but is of little use except to cover the ground so as to produce shelter for the more useful plants. It prefers a dry soil and a high altitude, but will grow on Moss, or on calcareous or chalky soils, and at a higher and more exposed altitude than any of the other Pines. The Scotch Pine, *P. sylvestris*, is also very accommodating as to soil and altitude. The merits of the Scotch Pine are so well known amongst arboriculturists, that they do not require to be set forth in a paper of this kind. The *P. austriaca*, while growing freely on light sand or gravelly soils, will also grow well on wet or heavier soils than either the Scotch Pine or the *pinaster*. However, it prefers a deep dry, calcareous sand and a southern exposure. The *austriaca* was introduced from the *Bremia* forest of Austria in 1835, and is a free-growing noble tree. It grows freely along the shores of the Firth of Clyde, and many noble specimens of it are to be seen throughout England. For producing shelter or forming a dark background in the landscape, it is unsurpassed. When allowed to grow in an open situation, its branches are wide-spreading and very picturesque. Its timber is strong, tough, and resinous, and in its native country is said to be valuable for resisting the effects of change from moisture to dryness. If this characteristic holds good of its timber grown in this country, it may yet come to be valuable as material for railway sleepers, &c. But for this purpose it is said to be surpassed by the *Pinus Laricio*, one of the most valuable and fast-growing Pines that has yet been introduced. Although introduced in 1759, it has not been so thoroughly tested on the sea-coast as the other Pines we have already mentioned; but wherever it has been carefully planted there it has given satisfaction. Being a native of the island of Corsica, where it frequently attains the height of 140 feet, it will, in course of time, be regarded as one of our best maritime plants. It is very difficult to transplant, and requires a good, open, loamy soil to ensure success. The wood of it is soft and easily wrought, of a whitish colour; the heart-wood is darker, and is found to be of very great duration. It is used by the French Government for ship building, and other favourable circumstances, is fit for masts for the navy in thirty or forty years. I have not seen the Corsican Pine planted to any extent along the sea-coast; but specimen plants of it are to be found growing within the influence of the sea-breeze in different parts of the Ayrshire and Wigtownshire coasts, and also on the shores of Campbeltown. The Larch (*Larix europæa*), Silver Fir (*Picea pectinata*), and Norway Spruce (*Abies excelsa*), are sometimes found growing remarkably well within the influence of the sea-breeze, but they cannot be relied upon unless sheltered by other trees. In fact, the Spruce, though growing within the influence of the sea in its native country, seldom attains even to mediocrity in the west of Scotland when exposed to the sea blast. The American Spruces, *A. nigra* and *A. alba*, are more to be depended on, but they do not come to be so useful timber trees. Where the soil is suitable for hard-woods, the Larch may be grown profitably amongst them; but on exposed sandy soils it will not succeed. The same may be said of the Silver Fir; but wherever a suitable situation for either of them can be got they should be introduced, as there are some fine specimens of them along the Firth of Clyde, and they soon come to be profitable trees when grown in a suitable situation. We have given the preference to the Pines for planting within the influence of the sea-breeze, both for shelter and profit; but it cannot fail to be observed that the broad-leaved or hardwood varieties of trees form the greater part of the plantations along the west coast of Scotland and the islands we have mentioned. Conspicuous amongst these, and growing where there roots are sometimes submerged in salt water, are the Sycamore (*Acer pseudo-Platanus*), a native of Switzerland, which withstands the sea-breeze better than most trees. It is rarely known to grow one-sided, even in the most exposed situations, where it is often seen standing alone. The Norway Maple (*A. platanoides*) is a native of the west coast of Norway and the shores of the Baltic, where it attains large dimensions, growing close to the sea-shore. The Scotch Elm (*Ulmus montana*), when exposed to the sea-breeze becomes a low-spreading tree, of little value for timber, but produces good shelter, and will thrive in almost any sort of soil that is not water-logged. The Alder (*Alnus glutinosa*) is specially

adapted for growing in the wet and marshy places along the shore. It stands the sea-breeze well, and has been used as a nurse in dry situations; but for this purpose it is surpassed by *A. incana*, the hoary-leaved Alder, which forms a very handsome tree, and will grow in either dry or moist soils. The Birch (*Betula alba*) is one of the most useful trees for growing in exposed situations; but when grown fully exposed to the sea-breeze it seldom attains that graceful weeping form which makes it such a general favourite in landscape scenery. As a maritime plant it is most useful for planting in a dry peaty soil, with a rocky bottom. On the island of Scurba, Birches are growing out of the rocks, where they are fully exposed to the ocean blast. The foregoing (with the exception of *A. incana*, which has been recently introduced) are what we have found to be the healthiest and most suitable trees for growing on the west coast of Scotland, in situations where they are fully exposed to the influence of the sea-breeze; but there are others that are found growing freely in some of the more sheltered nooks. Amongst these are the Beech (*Fagus sylvatica*), common Hornbeam (*Carpinus betulus*), Ash (*Fraxinus excelsior*), and Oak (*Quercus pedunculata* and *sessiliflora*). The two former are well suited for planting in a mass, or forming hedges; but I have not seen them succeed as timber trees when fully exposed to the sea-blast. They are, however, useful for planting as a mixture with other hardwood trees for shelter, as they retain (when young) their leaves during winter. The Ash, when grown in good soil and a little sheltered, form good timber trees, and ought to be cultivated wherever the situation is suitable. The Oak will grow exposed to the sea-breeze; but unless in very favourable situations, it becomes very "scraggy," and assumes a dwarf habit. If the soil is suitable, it may be cultivated profitably as copse-wood. The Willows also grow remarkably well on some parts of the sea-coast; in fact, they are so tenacious of life that they will grow almost anywhere; but they never succeed and become timber trees on the coast, except when grown in the hollow places by the side of the running water. These water "rills" are very common on some parts of the coast; and where they occur, no better situation can be got for the Willows. The sorts best suited for timber trees near to the coast are the Bedford Willow (*Salix Russelliana*), Huntingdon Willow (*S. alba*), and the Goat Willow (*S. caprea*). Besides these, a great many of the dwarf varieties of the *Salix* are suitable for growing as underwood. Some of the Poplars are said to grow well on the sea-coast, but I have not seen such success attend any of them as would warrant their being recommended as maritime plants; however, if they are sheltered and the soil suitable, they will ultimately become profitable.

Underwood.

Amongst the underwood best suited for planting within the influence of the sea-breeze must be enumerated a number of the semi-dwarf trees. I will only give the names of these, dividing them into two classes, viz., those that are suited for the general formation of plantations, and those that, though equally hardy, are by the price that is still charged for them, only suitable for ornamental planting. In the first class may be included the Laburnums (*Cytisus Laburnum* and *C. alpinus*). Mountain Ash (*Pyrus aucuparia*) is one of the most admirable trees for planting as a nurse in exposed plantations: it will grow in any soil and in the most exposed situations, is a free grower, and forms excellent copse-wood. Common Elder (*Sambucus nigra*), Black or Sloe-Thorn (*Prunus spinosa*), Sea Buckthorn (*Hippophae rhamnoides*), which is the best of all deciduous shrubs for standing the sea breeze: it seems quite at home on the shore, and will grow in pure gravel, throwing out its branches to the sea; the Hazel (*Corylus avellana*), common Whin or Furze (*Ulex europæa*), and the Privet (*Ligustrum vulgare*). These, along with the dwarf Pines we have mentioned, will produce sufficient shelter and give a very pleasing appearance to a plantation, as compared with the bare-stemmed stunted-looking trees that are so often to be seen along our shores. The ornamental shrubs for sea-side planting are the Bird Cherry (*Cerasus Mahaleb*), the Tamarisk (*Tamarix*), French Tamarisk (*T. gallica*), common Lilac (*Syringa vulgaris*), evergreen Oak (*Quercus ilex*), Snow-berry (*Symphoricarpos racemosus*), common Holly (*Ilex aquifolium*), Laurustinus (*Viburnum Tinus*), red-flowering Currant (*Ribes sanguineum*), the common Arbor-vitæ (*Thuja occidentalis* and *T. Warreana*). Besides these, specimens of the Araucaria imbricata, Cedrus Deodara, Wellingtonia gigantea, Cupressus Lawsoniana, and Nutkaensis, and others of the same class, are occasionally to be met with growing freely on the sea-coast; but they cannot be recommended except where shelter is provided, either natural or artificial. The Portugal and Common Laurel, Rhododendron ponticum and its varieties, are often planted, but do not succeed unless sheltered.

Preparation of the Ground.

Before concluding this paper I would beg to offer a few general remarks regarding the cultivation of plantations on the sea-coast and

islands; and, first, the preparation of the ground. If rank Whins or Heath are growing on the surface, they should be burnt down; Whins one year before planting, and Heath at least two years. This is better than trenching, as the natural Whins and Heath provide shelter for the young plants; only, the Whins must be kept in check, so as not to injure the young trees. Hard, "benty" ground on "links," with coarse herbage, ought to be trenched at least 18 inches deep, and the surface "spit" put into the bottom of the trench. This should also be done a considerable time previous to planting, so that the ground may have time to consolidate. Deep mossy or peat ground should also be trenched, and, if possible, some of the under strata (be it clay, sand, or gravel) brought to the surface. If this is not practicable, sand or gravelly soil should be got and added to the surface, so as to give the plants a fair start. Where the ground is wet, it must be thoroughly drained before planting, as nothing is so injurious to plants as stagnant water. On drift sand or sloping banks, much exposed to the sea breeze, screen fences must be provided. The plants must be well rooted, hardy, healthy, and, if possible, reared in the neighbourhood, and kept as short a time out of the ground before planting as possible. Planting operations ought to be done in the months of October and November, or March and April. In the case of Mossy ground it is absolutely necessary that the planting be not begun before the latter end of March. Where the situation is exposed, plant close and thin, early and often. Prune the hardwood trees when young, so that they may grow compact, and not be liable to have their side branches lashed or broken with the wind. Keep the young trees at all times clear of Brushwood or whatever tends to prevent a free current of air from passing through amongst them. The last is of the utmost importance, for unless trees are grown open and allowed to spread their branches, they will never spread their roots; and when the storm comes in all its fury, they become an easy prey to its ruthless blast.—*Transactions of the Scottish Arboricultural Society.*

Pines and Firs.—1. The Pine and Firs being so numerous, and the timbers of many being known in commerce by such a variety of names, it is difficult to ascertain the trees which yield them. 2. The Scotch Fir yields the red deal of Riga, called the yellow deal in London. Norway Spruce Fir yields white deal. 3. North American Pine, known as such here, as imported from America, has many names there. The North American Pine or Weymouth Pine is called white Pine in North America. Yellow Pine is chiefly employed in the States for house and ship building, and is considered to be next in durability to the southern Pine, which again is called Yellow Pine, Red Pine, and Pitch Pine. The American Pitch Pine or Red Pine, called Norway Pine in Canada and Yellow Pine in Nova Scotia, and many others, yields deals of various qualities more or less used in different districts. 4. The American Spruce Firs are the white, black, and red. The last is sometimes called Newfoundland Red Pine, and employed in ship building. Both it and the Black Pine are exported to England.—C. HOLTZAPFELL.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Eucalyptus at Balmuto.—I saw in THE GARDEN the other day (p. 42) a notice of this Eucalyptus, which is growing against the wall of my house. It is, however, certainly not *E. globulus*, but apparently *E. cordata*.—J. BOSWELL SYME, Balmuto, Kirkcaldy, Fifeshire.

The Japanese Quince as a Hedge Plant.—An ornamental hedge, formed of the best scarlet form of *Cydonia japonica*, is very beautiful when in full bloom. Another excellent quality of this plant is its defensive character. When properly trimmed, it forms a good hedge.

Bignonia radicans grandiflora.—I recently saw in the old village of Minster, about five miles from either Margate or Ramsgate, a magnificent specimen of this Bignonia. It covered the south side of a house, and was full of blossom, the flower-heads containing some eight or ten blooms of a handsome orange-red colour. Anyone in that neighbourhood who cares about such things should pay it a visit.—"RAMBLE."

The Burr Oak (Quercus macrocarpa).—This is perhaps the most ornamental of American Oaks. Nothing can exceed the graceful beauty of these trees, when not crowded or cramped in their growth, but left free to follow their own mode of development. Who has not admired these trees in American Burr Oak openings? Their large leaves are dark green above and a bright silvery white beneath, which gives the tree a singularly fine appearance when agitated by the wind. The wood is tough, close grained, and more durable than the White Oak, especially when exposed to frequent changes of moisture and dryness.

The Duke of Edinburgh's Norfolk Island Pine at Malta.—In the garden of the governor's town residence at Malta, which is surrounded on all sides by buildings, there is, we learn from the *Farmer's Gazette*, a magnificent specimen of the Norfolk Island Pine, *Araucaria excelsa*, to accommodate a specimen of which, as most of our readers are doubtless aware, the lofty octagon house at Glasnevin was originally built. The Malta specimen was planted in 1858 by the Duke, then Prince Alfred, and at that time was only 7 feet high. In the brief space which has intervened its growth has been so rapid that it is now a fine specimen, at least 60 feet in height.

"LONG MOSS."

(TILLANDSIA USNEOIDES.)

To the traveller in the Southern States of America no natural object is likely to be more striking than the Long Moss, which, from North Carolina to Texas, drapes the trees of all kinds, but is especially abundant upon those which grow in damp situations. This Moss is sometimes found only here and there in small tufts, but frequently it is in such quantities upon a tree as to appear to fill all the spaces between its branches, and from the lower limbs it hangs in pendent tufts several feet in length, which, as they are swayed by the wind, wave with a certain amount of grace. In localities where the Moss is very abundant, its dull grey colour and general drooping habit produce a very sombre effect. As it grows most luxuriantly in situations, which, from being constantly moist, are unhealthy, it is easy to associate it with disease and death, and in some localities it bears the not very cheerful name of "Coffin Fringe." Though popularly called Moss, it does not belong to Mosses, properly so called, at all, but, strange as it may seem, to the Pine-apple family, the Bromeliaceæ. Its botanical name is *Tillandsia usneoides*. The genus was named in honour of a Russian professor, Tillands, and its specific name means, resembling *Usnea*—a long drooping Lichen which hangs from northern trees in a similar manner. Including this, there are eight species of *Tillandsia* in the United States, this being the only slender pendulous one; some of the others have broad Pine-apple-like leaves, 2 feet or more long, with their bases dilated so as to hold water. All the *Tillandsias* are epiphytes—*i. e.*, they grow upon other plants, mostly upon the branches and trunks of trees, but they are not parasites, as they desire no nutriment from the plant to which they are attached; this merely serves them as a resting place, and they are nourished entirely by what the air and the rains bring to them. Some of the South American and West Indian species are valued as ornamental hot-house plants, and are usually grown in pots of *Sphagnum*, a condition which approaches nearly to their natural one. Indeed, our southern species are some of them quite handsome, especially *T. bracteata*, the bright red stems of which bear small purple flowers. The species under consideration, *T. usneoides*, is, as just stated, of a very different habit from the others. Its long branching stems are so slender as to be almost thread-like. They produce leaves at intervals of about 3 inches, which are narrow, recurved, and from 2 to 3 inches long; from the axil of each a branch is produced, which may be terminated by a flower or be much prolonged to form a part of the tangled mass of stems of which each plant

consists. The plant presents one peculiarity, of which we find no mention in any of the descriptions; each internode, or space of the stem between two leaves, forms an open graceful



Long Moss (*Tillandsia usneoides*).

spiral of about two turns, which adds much to the beauty of the plant, when its stems are separated and allowed to grow singly. Both stem and leaves present a uniform grey colour, which, while the plant is growing, has a greenish tinge; an examination with a glass shows the stems and leaves to be of a light apple green, but completely covered with small, almost transparent, overlapping scales, which give the silvery-grey appearance. The epidermis is readily separated from the central portion of the stem, which is tough, and resembles horsehair in size and appearance. The solitary flowers are borne at the ends of the branches; they have a three-parted calyx and corolla of three petals, which, though not more than a fourth of an inch across, is exceedingly interesting from being of bright gamboge-green colour. The pod is about an inch long, and splits up in such a manner as to look very much like a withered flower. Aside from forming a striking feature in the landscape, the Long Moss is of no little economical importance. The central portion, exceedingly tenacious and elastic, has long been employed as a substitute for hair. The plant is found in Central and South America and the West Indies, and has been put to so many uses by the Spanish Americans that in some localities it is known as "Spanish Moss." The primitive method of procuring the fibre is to place the Moss in shallow ponds exposed to the sun to rot the somewhat fleshy outer covering; it is then taken out and allowed to dry, after which a moderate beating removes the outer portion, and the fibre is left in a black tangled mass, which but for its branching character it would be difficult to distinguish from hair. We learn that since the war several establishments have been erected for the preparation of the Moss in a more rapid manner. The Moss is placed in large tanks, where it undergoes maceration by heat, and after drying is beaten by machinery; this is said to afford a superior product. By itself it forms an excellent stuffing for mattresses, chairs, and the like, and is probably largely used to mix with hair; it forms a considerable article of commerce, and its domestic uses are numerous. In Texas we have seen it twisted and woven into coarse matting, and it is said to be capable of forming excellent ropes and cables. — *American Agriculturist*. [This *Tillandsia* may be seen growing in the succulent house at Kew, on *Cereus rostratus*, a climbing species

of Cactus, and it is the opinion of many that it would succeed in the open air in Devonshire and in some of the other warmer parts of England, as in Texas it is often found coated with ice a quarter of an inch in thickness.—*Ed.*]

SQUILLS (SCILLA).

(Concluded from p. 136.)

Sub-genus II.—*Ledebouria* (Baker).

Perianth, rosy-purple or greenish, with strap-shaped segments, joined together for a considerable length at the base, and forming a cup, falcate in the expanded upper half of the flower; filaments, usually in one series, and inserted above the base of the segments; ovary, globose, stalked, usually expanded at the base into a disk; ovules, collateral, always in pairs in the cells; bracts, small, solitary, deltoid.

38. *S. Sandersoni* (Baker).—Leaves, produced along with the flowers, fleshy-herbaceous, ascending, ovate-oblong, sub-acute, narrowed abruptly at the base, 2 to 2½ inches long, 9 to 15 lines broad, with very numerous sunken veins; flower-stems, 2 to 2½ inches high; racemes, roundish, somewhat dense, containing from twelve to twenty flowers each, and 9 or 10 lines in diameter; most of the flowers are abortive; pedicels, 3 or 4 lines long, the lower ones nodding; perianth, roundish bell-shaped, 1½ lines long, of a deep rosy-purple colour, with strap-shaped segments, one-third of a line broad, distinctly streaked with green on the back, and falcate in the expanded upper half of the flower; filaments, thread-like, of a rosy-purple colour, and 1 line long; ovary, globose, stalked, with a discoid expansion at the base; style, thread-like, half a line long, deeply coloured. Cape of Good Hope, in the Transvaal district.

39. *S. revoluta* (Baker).—Bulb, globose, multiplying abundantly; leaves, five to nine in number, fleshy-herbaceous, spreading, produced along with the flowers, oblanceolate, spoon-shaped, acute, gradually narrowed at the base into a short channelled foot-stalk, 2½ to 3 inches long, 6 to 8 lines broad, green and somewhat wrinkled on the upper surface; flower-stem, central, very slender, flexuose, 3 to 6 inches high, at first nodding at the apex, coloured at the base; racemes, oblong lance-shaped, loose, containing from twelve to thirty flowers each, and, when fully expanded, 2 or 3 inches long, and 12 to 15 lines broad; pedicels, patent, the lower ones 6 to 8 lines long; flowers, nodding; perianth, roundish, bell-shaped, 1½ lines long, of a deep rosy-purple colour, with strap-shaped segments, half a line across, streaked with green on the back, falcate in the expanded upper half of the flower; filaments, thread-like, rosy-purple, 1 line long; style, thread-like, deeply coloured; capsule, globose, stalked, with a discoid expansion at the base. Cape of Good Hope; formerly much grown in European gardens, but now apparently lost.

40. *S. minima* (Baker).—Bulb, elongated-ovoid, 3 or 4 lines in diameter, the outer coats membranous and lengthened at the apex; leaves, produced along with the flowers, fleshy-herbaceous, ascending, green, smooth, linear, acute, 12 to 13 lines long, 1 to 1½ lines broad; flower-stems, one to two in number, very slender, flexuose, 1 or 2 inches long; raceme, oblong, somewhat dense, containing from twelve to thirty flowers, and, when fully expanded, 1 inch long and 5 or 6 lines in diameter; pedicels, 1½ to 2 lines long, sub-patent, the lower ones nodding; perianth, roundish, bell-shaped, 1 line long, of a deep rosy-purple colour, with segments 1½ lines across, broadly streaked with green on the back, falcate in the expanded upper half of the flower; filaments, purplish, a little shorter than the segments; ovary, stalked, with a discoid expansion at the base. Cape of Good Hope.

41. *S. exigua* (Baker).—Leaves, fleshy-herbaceous, ascending, lance-shaped, 1½ to 2 inches long, 3 lines broad, streaked and spotted with purple; flower-stem, straight, 2 or 3 inches high; raceme, somewhat dense, containing from twelve to twenty flowers, and, when fully expanded, oblong, about 1 inch long, and 5 or 6 lines in diameter; pedicels, 1½ to 2 lines long, the lowest ones nodding; perianth, roundish bell-shaped, 1½ lines long, with segments of a deep rosy-purple, and green at the bottom outside; filaments, thread-like, distinctly shorter than the segments; ovary, shortly stalked, with a discoid expansion at the base. Natal.

42. *S. Barberi* (Baker).—Leaves, produced along with the flowers, fleshy-herbaceous, linear, smooth, 2 to 2½ inches long, 1½ lines broad; flower-stem, 2 to 2½ inches high; raceme, loose, containing five or six flowers, and, when fully expanded, oblong, 12 to 15 lines long and 7 or 8 lines in diameter; pedicels, 1½ to 2 lines long, sub-patent, the lower ones nodding; perianth, oblong bell-shaped, 2 lines long, of a deep rosy-purple colour, greenish at the bottom on the outside; ovary, distinctly stalked, with a discoid expansion at the base. Cape of Good Hope, on the banks of the river Tsomo.

43. *S. Cooperi* (Hook. fil. "Bot. Mag." t. 5,580).—Bulb, sub-globose, purple, 1 inch in diameter; leaves, four or five in number, sub-erect, fleshy-herbaceous, linear lance-shaped, gradually narrowed towards the pointed apex, 8 to 10 inches long, 6 to 9 lines broad, green, streaked on the back and spotted at the base with purple; flower-stem, firm, flexuose, 5 or 6 inches high; raceme, somewhat dense,

containing from thirty to fifty flowers, and, when fully expanded, cylindrical in shape, 2 or 3 inches long and 1 inch broad; pedicels, sub-patent, 4 to 6 lines long, the lower ones nodding; perianth, globose bell-shaped, 1½ lines long, with segments half-a-line broad, green on the back, and falcate in the expanded upper half of the flower; filaments, thread-like, 1 line long, of a deep purple colour; ovary, stalked, with a discoid expansion at the base; style, purple, 1 line long, finally projecting slightly. Cape of Good Hope. Grown in Kew Gardens in 1863.

44. *S. Zambesiaca* (Baker).—Bulb, ovoid, 8 or 9 lines in diameter, the outer coats membranous, lengthened; leaves, two or three in number, produced along with the flowers, fleshy-herbaceous, tender, acute, ovate-lance-shaped, 2 to 2½ inches long, 9 or 10 lines broad, very much undulated at the edges, and narrowed at the base into a foot-stalk an inch long, embracing the stem; flower-stems, erect, very slender, 2 or 3 inches high; racemes, somewhat loose, containing from thirty to forty flowers, and, when fully expanded, cylindrical in shape, 2 or 3 inches long, and 5 or 6 lines in diameter; pedicels, patent, 1½ to 2 lines long; flowers, nodding; perianth, roundish, bell-shaped, 1 line long, greenish on both sides, with segments one-third of a line broad, paler at the edges, and reflexed in the expanded upper half of the flower; filaments, whitish, a little shorter than the segments; ovary, stalked, with no discoid expansion at the base. South-eastern tropical Africa, at Tette, on the banks of the Zambesi River.

45. *S. Cameroonia* (Baker).—Bulb, ovoid, 8 or 9 lines in diameter; leaves, fleshy-herbaceous, produced along with the flowers, sub-erect, thong-like, 5 or 6 inches long, 6 to 8 lines broad, bluntish and very shortly cuspidate at the apex, and gradually narrowed at the base into a foot-stalk, which embraces the stem; flower-stems, slender, flexuose, 4 to 6 inches high; racemes, loose, containing from twenty to thirty flowers each, and, when fully expanded, of a cylindrical lance-shape, 2 or 3 inches long, and 6 to 9 lines broad; pedicels, sub-patent, 3 or 4 lines long, the lower ones nodding at the apex; bracts, small, sometimes in pairs; perianth, roundish-bell-shaped, greenish, with segments ½ line broad, falcate in the upper part of the flower; filaments, 1 line long, of a deep purple colour; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope and Caffraria. Grown in Kew Gardens in 1862-3.

46. *S. prasina* (Baker).—Bulb, elongated, ovoid, 9 to 12 lines in diameter; leaves, five or six in number, fleshy-herbaceous, spreading, oblong-lanceolate, 4 to 5 inches long, 12 to 15 lines broad in the middle, acute, lower third narrow, often spotted with purple; stem, flexuose, deflexed, 3 to 4 inches long; racemes, sub-dense, with thirty to fifty flowers, expanding, lanceolate, or sub-cylindrical, 1½ to 2 inches long, 6 to 10 lines broad; pedicels, central, horizontal, spreading, 1½ to 2½ lines long, deflexed inferiorly; perianth, rounded, bell-shaped, greenish; segment ½ line broad, falcate above; filaments, 1 line long, stained with purple; ovary, stipitate, producing discoids at the base. Cape of Good Hope. Grown in Kew Gardens in 1862-3.

47. *S. Ludwigii* (Baker).—Bulb, ovoid, 8 or 9 lines in diameter; outer coats membranous and lengthened at the apex; leaves, five or six in number, ascending, fleshy-herbaceous, lance-shaped, 2 or 3 inches long, 5 or 6 lines broad, hardly narrowed at the base, gradually narrowed towards the acute apex; flower-stem, 1 to 3 inches high; racemes, dense, containing from twenty to forty flowers each, and, when fully expanded, of a cylindrical lance-shape, 1½ to 2 inches long, and 4 or 5 lines broad; pedicels, 1½ to 2 lines long, the lower ones nodding; perianth, green, roundish-bell-shaped, 1 line long; filaments, purplish thread-like, a little shorter than the segments; ovary, stalked, discoid at the base. Cape of Good Hope.

48. *S. moesta* (Baker).—Bulb, ovoid, 15 to 18 lines in diameter; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, lance-shaped, sub-erect, 5 or 6 inches long, 6 to 9 lines broad, spotted with purple, slightly narrowed at the base and gradually narrowed in the upper half towards the acuminate apex; flower-stems, two or three in number, flexuose, 3 or 4 inches long; raceme, somewhat dense, containing from thirty to fifty flowers, and, when fully expanded, of a cylindrical shape, 1½ to 2 inches long, and 6 or 7 lines in diameter; pedicels, ascending, 3 or 4 lines long; perianth, green, oblong-cylindrical, 1½ lines long; filaments, greenish, ¾ line long, distinctly shorter than the segments; ovary, stalked, with a discoid expansion at the base. South-eastern tropical Africa, near Luabo, at the delta of the Zambesi River.

49. *S. undulata* (Baker).—Bulb, globose, 1½ to 2 inches in diameter, scaly on the lower half, where it meets the soil; leaves, produced after the flower-stem, five or six in number, firmish, lance-shaped, acute, glaucous, smooth, ascending, undulated, 4 or 5 inches long, 3 or 4 lines broad; flower-stem, firm, tapering, 1½ to 2 inches high; raceme, somewhat dense, containing from twenty to thirty

flowers, and, when fully expanded, oblong in shape, $1\frac{1}{2}$ to 2 inches long, and 12 to 15 lines in diameter; pedicels, horizontal, 3 to 5 lines long; perianth, 3 or 4 lines long, oblong bell-shaped, greenish, slightly tinged with purple; filaments, whitish, a little shorter than the segments; ovary, stalked. Cape of Good Hope.

50. S. Currori (Baker).—Leaves, produced along with the flowers, fleshy-herbaceous, rounded, cuspidate, 8 or 9 lines long, 7 or 8 lines broad, rounded or slightly heart-shaped at the base, with a distinct foot-stalk, 5 or 6 lines long, which embraces the flower-stem; flower-stem, erect, straight, about 1 inch high; raceme, somewhat dense, containing ten or twelve flowers, and 9 or 10 lines in diameter; pedicels, straight, erect-patent, 5 or 6 lines long; perianth, tubular bell-shaped, $2\frac{1}{2}$ lines long, with strap-shaped purple segments, paler at the edges, and $\frac{1}{2}$ line broad; filaments, pale, thread-like, half the length of the segments; ovary, sessile, top-shaped, with no discoid expansion of the base; style, thread-like, purple, as long as the ovary. Equinoctial parts of Guinea.

51. S. Richardiana (Buching).—Bulb, ovoid, 8 or 9 lines in diameter, and growing under the surface of the soil; leaves, two in number, opposite, fleshy-herbaceous, produced along with the flowers, oblong lance-shaped, smooth, sub-acute, sometimes bearing bulbils at the edges, 2 to $2\frac{1}{2}$ inches long, 8 to 12 lines broad, narrowed at the base into a foot-stalk an inch long, which embraces the stem; flower-stems, one or two in number, erect, 4 to 6 inches high; racemes, somewhat loose, containing from ten to thirty flowers each, and, when fully expanded, oblong or cylindrical in shape, 1 to 3 inches long, and 9 to 12 lines in diameter; pedicels, 3 or 4 lines long, at first nodding; perianth, oblong bell-shaped, 2 to $2\frac{1}{2}$ inches long, greenish, slightly tinged with purple, and with the segments falcate in the upper half of the flower; filaments, purple, a little shorter than the segments; ovary, globose, sub-sessile, with no discoid expansion of the base. Abyssinia.

52. S. maculata (Baker).—Bulb, ovoid, 8 or 9 lines in diameter, coated towards the apex, and growing under the surface of the soil; leaves, three or four in number, produced along with the flowers, fleshy-herbaceous, oblong, obtuse, 2 or 3 inches long, 9 to 12 lines broad, spotted on the upper surface, never bearing bulbils at the edges, gradually narrowed at the base into a foot-stalk, which embraces the stem; flower-stems, one or two in number, 4 to 8 inches high; racemes, somewhat dense, containing from twenty to fifty flowers each, and, when fully expanded, 2 to 4 inches long, and 10 to 12 lines in diameter; perianth, 2 lines long, of a greenish-purple colour; filaments, of a deep purple, a little shorter than the segments; ovary, distinctly stalked, with no discoid expansion of the base. The East Indies, everywhere in both the Concano districts.

53. S. indica (Baker).—Bulb, ovoid, 1 to 2 inches in diameter, scaly at the top; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, oblong, or lance-shaped, acute, 3 to 6 inches long, 9 to 12 lines broad, often bearing bulbils at the edges, gradually narrowed at the base and embracing the bottom of the flower-stem; flower-stems, one to three in number, flexuose, 2 to 6 inches high; racemes, dense, containing from thirty to sixty flowers each, and, when fully expanded, of an oblong-cylindrical shape, 2 to 4 inches long, 9 to 12 lines in diameter; pedicels sub-patent, 3 or 4 lines long; perianth, $1\frac{1}{2}$ to 2 lines long, somewhat roundish, bell-shaped, of a greenish-purple colour, with segments falcate in the upper half of the flower; filaments, purple, a little shorter than the segments; ovary, globose, distinctly stalked, with no discoid expansion of the base. The East Indian Peninsula and Ceylon. Also recorded from Abyssinia by Dr. Schweinfurth, under the name of *Drimia lilacina*.

54. S. lilacina (Baker).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter, scaly at the top; leaves, six to eight in number, produced along with the flowers, fleshy-herbaceous, sub-erect, oblong-lance-shaped, acute, undulated, 3 or 4 inches long, 12 to 15 lines broad, narrowed like a wedge at the base into a foot-stalk 1 or 2 inches long, and embracing the stem; flower-stems, one to three in number, flexuose, slender, 4 to 6 inches high; racemes, somewhat loose, containing from thirty to sixty flowers each, and, when fully expanded, cylindrical in shape, 3 to 5 inches long, and 12 to 15 lines in diameter; lower pedicels, sub-patent, 3 to 5 lines long; flowers nodding; perianth, 3 to $3\frac{1}{2}$ lines long, tubular bell-shaped, of a lilac-purple colour, with strap-shaped segments inflated at the side and apex, like those of a *Drimia*; filaments, deeply coloured, 2 to $2\frac{1}{2}$ lines long; ovary, top-shaped, sessile, with no discoid expansion of the base. Nubia.

55. S. paucifolia (Baker).—Bulbs, gregarious, ovoid, 12 to 15 lines in diameter, with the top over-ground and scaly; leaves, two in number (rarely three), opposite, produced along with the flowers, patent, fleshy-herbaceous, oblong-lance-shaped, acute, undulated, $2\frac{1}{2}$ to 3 inches long, 9 or 10 lines broad, pale green on the upper surface, marked with darker spots, slightly narrowed at the base, and embracing the stem; flower-stem, firm, not spotted, terete,

3 or 4 inches high; raceme, loose, containing from twenty to thirty flowers, and, when fully expanded, oblong in shape, 3 or 4 inches long, and 15 to 18 lines in diameter; pedicels, 5 or 6 lines long, the lower ones nodding; perianth, greenish, roundish bell-shaped, $2\frac{1}{2}$ to 3 lines long, with segments falcate in the upper half of the flower; filaments of a deep purple colour, a little shorter than the segments; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. Wilson Saunders's garden.

56. S. socialis (Baker).—Bulbs, gregarious, ovoid, 15 to 18 lines in diameter, with the top over-ground and scaly; leaves, three or four in number, produced along with the flowers, fleshy-herbaceous, patent, oblong-lance-shaped, acute, 2 to $2\frac{1}{2}$ inches long, 9 to 12 lines broad below the middle, slightly narrowed at the base, of a pale glaucous green on the upper surface, marked with darker spots; flower-stem, firm, terete, not spotted, 2 or 3 inches high; raceme, dense, containing from twenty to thirty flowers, and, when fully expanded, oblong in shape, $1\frac{1}{2}$ to 2 inches long, and 1 inch in diameter; pedicels, $1\frac{1}{2}$ to 2 lines long, the lower ones nodding; perianth, greenish, roundish bell-shaped, 2 to $2\frac{1}{2}$ lines long, with segments falcate in the upper part of the flower; filaments, $1\frac{1}{2}$ lines long, of a deep purple colour; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. Wilson Saunders's garden.

57. S. lanceæfolia (Baker).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter, with the top over-ground and scaly; leaves, six to eight in number, produced along with the flowers, fleshy-herbaceous, sub-patent, oblong, acute, 4 to 6 inches long, $1\frac{1}{2}$ to 2 inches broad above the middle, narrowed for a short distance at the base, pale green on the upper surface, marked with darker spots; flower-stems one to three in number, firm, terete, 2 to 4 inches long, often curved downwards; racemes, dense, containing from thirty to fifty flowers each, and when fully expanded, oblong in shape, 2 or 3 inches long, and 15 to 18 lines in diameter; pedicels, 5 or 6 lines long, the lower ones bent downwards; perianth, somewhat globose, bell-shaped, $2\frac{1}{2}$ to 3 lines long, with strap-shaped lanceolate segments, which are purple on the inside and greenish on the back; filaments, 2 lines long, of a deep purple colour; ovary, stalked, with a discoid expansion of the base.—Cape of Good Hope, Caffraria, and Natal. *Scilla maculata* of Schrank, Pl. var. Hort. Monac. t. 100, is a variety with flower-stems 6 inches high, and with leaves double the length. A variety, *S. l. ovatifolia* (Baker), has shorter and broadly ovate leaves, 2 or 3 inches long, and 18 to 24 lines broad above the middle. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

58. S. concolor (Baker).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter, of an ash colour and scaly in the upper part; leaves, 5 or six in number, produced along with the flowers, fleshy-herbaceous, falcate, strap-shaped lanceolate, 5 to 8 inches long, 15 to 18 lines broad in the middle, obtuse, or sub-acute, narrowed for a short distance at the base, of a deep green and unspotted on both sides; flower-stems, one to three in number, flexuose, green, 3 or 4 inches high; racemes, dense, containing from thirty to fifty flowers each, and, when fully expanded, oblong-cylindrical in shape, 3 or 4 inches long, and 9 to 12 lines in diameter; pedicels, 2 to 4 lines long, the lower ones nodding; perianth, greenish, roundish bell-shaped, $2\frac{1}{2}$ lines long; filaments, greenish, a little shorter than the segments; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope. Grown at Kew and in Mr. W. Saunders's garden.

59. S. linearifolia (Baker).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter, growing with the top under the surface of the soil; leaves, four to six in number, fleshy-herbaceous, somewhat erect, linear, 9 to 12 inches long, 4 to 8 lines broad, acute, narrowed for a short distance at the base, of a pale green, and spotted with purple for a short distance down the back; flower-stem, flexuose, 3 or 4 inches high; raceme, somewhat dense, containing from thirty to forty flowers, and, when fully expanded, oblong in shape, 2 or 3 inches long, and 15 to 18 lines broad; pedicels, 3 to 5 lines long, the lower ones nodding; perianth, $2\frac{1}{2}$ to 3 lines long, oblong bell-shaped, of a deep purple on the inside, greenish on the outside, with segments falcate in the upper half of the expanded flower; filaments, $1\frac{1}{2}$ to 2 lines long, deeply coloured; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope and the Transvaal district. Grown in Mr. W. Saunders's garden.—*Drimia angustifolia* of Kunth is, from the description, probably, a form of this species with narrower leaves. They are said to be $1\frac{1}{2}$ lines broad.

60. S. concinna (Baker).—Bulb, ovoid, growing under the surface of the soil; leaves, three to four in number, produced along with the flowers, fleshy-herbaceous, somewhat erect, linear, 8 or 9 lines broad, narrowed for a short distance at apex and base, of a deep glaucous green colour, marked on the back with purple spots; flower-stem firm, erect, terete, 2 to 6 inches high; raceme, dense, containing from twenty to thirty flowers, and, when fully expanded, oblong in shape, $1\frac{1}{2}$ to 2 inches long, and 12 to 15 lines broad; all

the pedicels erect-patent, the lowest ones 4 or 5 lines long; perianth, oblong bell-shaped, $2\frac{1}{2}$ lines long, of a deep rosy-purple on the inside; filaments, $1\frac{1}{2}$ lines long, deeply coloured; ovary, stalked, with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

61. *S. subglaucia* (Baker).—Bulb, sub-globose, $1\frac{1}{2}$ to 2 inches in diameter, growing under the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, strap-shaped, lanceolate, 9 or 10 inches long, 1 inch broad in the middle, acute, distinctly narrowed at the base, pale glaucous green on the upper surface, slightly spotted with purple on the back; flower-stem, spotted, 3 or 4 inches high; racemes, somewhat loose, containing from thirty to forty flowers each, and, when fully expanded, 3 or 4 inches long and 18 to 20 lines in diameter; pedicels, 6 or 7 lines long, the lower ones nodding; perianth, oblong bell-shaped, 3 lines long, greenish outside, purple within; filaments, 2 lines long, of a deep purple colour; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

62. *S. lorata* (Baker).—Bulb, ovoid, $1\frac{1}{2}$ to 2 inches in diameter, growing under the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, somewhat erect, thong-like, lance-shaped, 8 or 9 inches long, 10 to 12 lines broad in the middle, acute, narrowed for a short distance at the base, of a deep green colour, spotted with purple downwards on the back; flower-stem, terete, erect, 8 or 9 inches high, spotted on the lower half; raceme, somewhat dense, containing from thirty to sixty flowers, and, when fully expanded, of an oblong-cylindrical shape, 3 or 4 inches long, and from 18 to 21 lines broad; pedicels, 4 or 5 lines long, the lower ones nodding; perianth, of a livid purple colour, the segments tinged with a greenish hue on the back and edges, 3 or 4 lines long, and oblong bell-shaped; filaments, purple, shorter than the segments; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

63. *S. zebrina* (Baker).—Bulb, $1\frac{1}{2}$ to 2 inches in diameter, growing almost beneath the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, strap-shaped lanceolate, somewhat erect, 8 to 12 inches long, 12 to 21 lines broad, acute, slightly narrowed at the base, of a pale glaucous green on the upper surface, streaked with purple on the back, and spotted with purple downwards; racemes, dense, containing from thirty to forty flowers each, and, when fully expanded, of an oblong cylindrical shape, 3 or 4 inches long and 15 or 16 lines in diameter; pedicels, 3 or 4 lines long, the lower ones nodding; perianth, roundish bell-shaped, 3 lines long, of a greenish-purple colour; filaments, of a deep purple, distinctly shorter than the segments; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

64. *S. spatulata* (Baker).—Bulb, ovoid, 2 to $2\frac{1}{2}$ inches in diameter, purple, the upper part over-ground and scaly, leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, thong-like, spoon-shaped, 6 to 8 inches long, 18 to 21 lines broad, of a pale glaucous green colour, marked with darker and purple spots; flower-stems, flexuose, 3 or 4 inches high; racemes, dense, containing from thirty to forty flowers, and, when fully expanded, 3 or 4 inches long and 18 to 21 lines in diameter; pedicels, 6 or 7 lines long, the lower ones nodding; perianth, oblong bell-shaped, $3\frac{1}{2}$ lines long, purple on the inside, greenish on the outside; filaments, of a deep purple colour, a little shorter than the segments; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

65. *S. Kirkii* (Baker).—Leaves, produced along with the flowers, fleshy-herbaceous, thicker and firmer than those of any other species, oblong lance-shaped, acute, 6 to 8 inches long in the blade, $1\frac{1}{2}$ to 2 inches broad, narrowed at the base into a wedge-like, broad, channelled foot-stalk, 2 to 4 inches long; flower-stem, stout, about a foot high; raceme, loose, containing from thirty to forty flowers, and, when fully expanded, 5 or 6 inches long, and 18 to 20 lines in diameter; pedicels, 2 to 5 lines long, the central ones sub-patent, lower flowers nodding; perianth, $4\frac{1}{2}$ lines long, tubular bell-shaped, greenish outside, purple within, with narrow segments which are rolled inwards at the sides and apex, like those of a *Drimia*; filaments, $3\frac{1}{2}$ lines long, of a deep purple colour; ovary, stalked. Zanzibar.

66. *S. lanceolata* (Baker).—Bulb, sub-globose, 15 to 18 lines in diameter, and growing entirely under the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, lance-shaped, acute, 3 or 4 inches long, 8 to 10 lines broad, green, without spots; flower-stem, flexuose, 4 or 5 inches high; raceme, very loose, containing from eight to twelve flowers, and, when fully expanded, $1\frac{1}{2}$ to 2 inches long, and $1\frac{1}{2}$ inches broad; pedicels, dotted with red, sub-patent, the lower ones 5 or 6 lines long; perianth, tubular bell-shaped, 4 to $4\frac{1}{2}$ lines long, of a purplish-

green colour; filaments, deeply coloured, a little shorter than the segments; ovary, stalked. Cape of Good Hope.

67. *S. floribunda* (Baker).—Bulb, sub-globose, 2 to $2\frac{1}{2}$ inches in diameter, growing almost entirely under the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, somewhat erect, thong-like, about a foot long, 21 to 24 lines broad in the middle, acute, hardly narrowed at the base, of a pale green colour, marked with deeper spots; flower-stem, stout, erect, 6 to 9 inches high; raceme, somewhat dense, containing from sixty to 100 flowers or more, with a thickened, furrowed axis, and when fully expanded, 6 to 8 inches long and 2 inches broad; pedicels, 6 to 8 lines long, the central ones patent, lower ones nodding; perianth, oblong bell-shaped, $4\frac{1}{2}$ to 5 lines long, greenish on the outside, and rosy-purple within; filaments, 3 lines long, deeply coloured; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown in Mr. W. Saunders's garden.

68. *S. pendula* (Baker).—Leaves, produced along with the flowers, fleshy-herbaceous, thong-like, 12 to 15 inches long, 15 to 16 lines broad in the middle, acute, slightly narrowed at the base, flattish, of a pale green colour, very faintly spotted; flower-stem, very slender, flexuose, 8 or 9 inches high; racemes, somewhat dense, containing from thirty to sixty flowers each, and, when fully expanded, 3 to 6 inches long, and $2\frac{1}{2}$ to 3 inches in diameter; pedicels, very slender, 9 to 15 lines long, many of them nodding; perianth, 4 to $4\frac{1}{2}$ lines long, oblong bell-shaped, greenish on the outside, purple within; filaments, of a deep purple colour, a little shorter than the segments; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope.

69. *S. princeps* (Baker).—Bulb, globose, $2\frac{1}{2}$ to 3 inches in diameter, growing entirely under the surface of the soil; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, thong-like, 18 to 24 inches long, 2 to $2\frac{1}{2}$ inches broad, acute, narrowed at the base, of a pale green colour, marked with deeper spots; flower-stems, two or three in number, stout, 7 to 9 inches high; raceme, dense, containing from 150 to 200 flowers, with a thickened furrowed axis, and, when fully expanded, a foot long, and from 3 to $3\frac{1}{2}$ inches in diameter; pedicels, 12 to 15 lines long, the central ones patent, the lower ones nodding; perianth, oblong bell-shaped, $4\frac{1}{2}$ to 5 lines long, reddish-purple on the inside, and greenish without, with segments 1 line broad, reflexed in the upper half; filaments, 3 to $3\frac{1}{2}$ lines long, of a deep purple colour; ovary, stalked, and with a discoid expansion of the base. Cape of Good Hope. Grown at Kew and in Mr. W. Saunders's garden.

Doubtful Species of this Sub-genus.

70. *S. viridiflora* (Baker) (*Drimia viridiflora*, Ecklon, Kunze, Linnæa, xx. 10).—Leaves, linear awl-shaped, channelled, shorter than the flower-stem; raceme, many-flowered; pedicels, patent, shorter than the flowers; perianth, greenish on the outside, whitish within. Cape of Good Hope (Gueinzins). I have not seen a specimen.

Sub-genus III.—*Endymion* (Baker).

Perianth, normally blue, but frequently varying to rosy-purple or whitish; segments, remaining united for a considerable time in the lower half of the expanded flower; filaments, in two distinct series, inserted above the base of the segments; ovary, sessile, with numerous ovules in each cell; bracts, linear, in pairs.

71. *S. hispanica* (Mill. Dict.).—Bulb, ovoid, 6 to 12 lines in diameter; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, smooth, ascending, linear thong-like, 6 to 9 (or, in cultivated specimens, 12) lines broad, bluish, convex on the back; flower-stem, 6 to 9 inches high; raceme, equilateral, somewhat loose, containing from six to twelve flowers; bracts, linear, in pairs, 6 to 9 lines long; lower pedicels, 6 to 12 lines long; flowers, more spreading than those of *S. non-scripta*; perianth, sub-globose, bell-shaped, 6 to 9 lines long, with segments 2 to $2\frac{1}{2}$ lines broad; filaments inserted alternately above the base, and at the top of the upper third of the segments; free part, $2\frac{1}{2}$ to 3 lines long; ovules, six to eight in each cell; capsule, like that of *S. non-scripta*. Spain and Portugal. Frequently grown in gardens. *S. campanulata* ("Bot. Mag." t. 1102) is a form with spreading flowers, a little smaller and more oblong bell-shaped, approaching *S. non-scripta*. It is also found in Southern France and in Italy.

72. *S. non-scripta* (Hoffm. et Link.) (*Hyacinthus non-scriptus*, Linn.; *Scilla nutans*, Smith).—Bulb, ovoid, 6 to 9 lines in diameter; leaves, five or six in number, produced along with the flowers, fleshy-herbaceous, smooth, ascending, linear-thong-like, convex on the back, 8 to 12 inches long, 3 to 6 lines broad; flower-stem, 6 to 12 inches high; raceme, nodding, containing from six to twelve flowers, somewhat turned to one side of the stem; pedicels, 4 to 6 lines long, nodding when in flower, but ascending when bearing fruit; bracts, linear, in pairs, 6 to 9 lines long; perianth, tubular, bell-shaped, 6 to 9 lines

long, with strap-shaped segments, $1\frac{1}{2}$ to 2 lines broad; filaments, alternately inserted in the middle of the segments (when the free part is $1\frac{1}{2}$ lines long), and alternately at the top of the lower fourth (when the free part is a little longer); ovules, six to ten in each cell; capsule, sub-sessile, ovoid, 5 or 6 lines long; seeds, globose, black, scarcely 1 line in diameter.—Britain, and extending to Spain, Italy, and Illyria. *S. cernua* (Hoff. et Link.; *Hyacinthus cernuus*, Linn.), is a small Spanish and Portuguese form, with reddish flowers. There is a garden form called *bracteata*, distinguished by its elongated bracts, which are 2 inches or more in length.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

CONTINUE to increase, by cuttings, the stock of bedding *Pelargoniums* for next year's embellishment as fast as such cuttings can be obtained, although it will still be unadvisable to, in any degree, despoil the flower beds for this purpose; but, in the meantime, endeavour to make the most of any surplus stock which may have been left in pots at the time of bedding out, or which may have been planted in the reserve ground. Attend well to the watering, stopping, and pegging down, when required, of plants forming what are known as "carpet beds," as such beds will be found to be by no means the least attractive in the flower garden during the present season, being composed, in a great measure, of succulents and other plants upon which extreme drought has not so injurious effects as it has upon many other decorative plants. The brilliantly coloured foliage of the *Alternantheras*, *Coleuses*, *Golden-feather Pyrethrum*, &c., renders the use of flowering plants little, if at all, necessary in this style of planting. Still, a bright blue colour is a desideratum which is hardly secured in the glaucous hue of the foliage of the *Echeveria secunda glauca* or the *Sedum glaucum*; but can, nevertheless, be obtained by using some of the dwarf blue *Lobelias* of the "pumila section," and of which the new double variety is decidedly the best, and appears to be less apt to die off in patches than some of its single flowering congeners. Beds of sub-tropical plants should still be abundantly supplied with water, as they are nearly all gross feeders; and tall-growing species, such as the *Castor-oil* plants, should, if in exposed situations, be securely staked to prevent injury from high winds. Very few annuals can be confidently recommended as bedding plants, on account of their short duration; although such species as the blue *Lobelias*, the *Perilla*, and the *Golden-feather Pyrethrum*, generally succeed best when raised from seed every season. It is also found that the *Abronia umbellata grandiflora* succeeds well when treated in this manner, and forms an exceedingly pretty and interesting bed, more particularly during such dry and hot seasons as the present has so far been, and as its native habitat is the loose dry sands on the sea coast of tropical countries, it will naturally suffer little, if at all, from the heat and drought of this country. Its habit of growth is that of a trailing plant, which, with a very little training or regulating, soon completely covers the surface of the soil, while its stout glossy dark green foliage is plentifully bespangled with sparkling trusses of bright pink white-eyed flowers, which do not rise above 6 inches from the surface of the soil. Plant out in properly prepared soil, in beds or patches, where they are intended to flower, rooted cuttings of *Pinks* and *Picotees*, also of *Pansies* and double-flowered *Wallflowers*, &c., and as it is advisable to perpetuate unusually fine varieties of *Sweet Williams* by cuttings, if these cuttings were inserted under hand-glasses when the plants were in flower, they will now be rooted, and may at once be planted in beds or borders, where they are intended to remain. Plant out at the same time the various sorts of biennial and perennial hardy plants which have been raised from seed, including the German and other *Wallflowers*, the strain of which has of late years been so greatly improved, that such seed generally produces varieties nearly, if not altogether equal to the old double sorts, which can be perpetuated by cuttings only. Plant also *Brompton* and *Queen Stocks* in situations where they are intended to flower; and where it is desired to have the *Ten-week* and *Intermediate* sorts in flower in spring, they should be sown now, and a portion of them, at least, should be afterwards potted-up and kept in cold pits or frames during winter. Look frequently over beds of seedling *Hollyhocks*, and pull up at once all worthless varieties as soon as they flower, and increase promising seedlings and named sorts by cuttings or eyes. Attend also to the watering of *Auriculas* and *Polyanthuses* in pots, keeping them, as yet, in a somewhat shady situation, and free from weeds, &c.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

Where pot *Roses* are required for forcing, if not already done, no time should be lost in giving them a shift, and in seeing that the drainage is effective. *Roses*, to keep up a supply of bloom from December to March, should not, however, be shifted; only see to the drainage, and top-dress with some nice fresh loam and rotten dung, as it is rather too late now to disturb the roots too much. The drainage of the pots sometimes gets filled up through worms; and, in that case, water continually given sours the soil and rots the roots. When this occurs, I shake the plants out, wash their roots, and while wet, sprinkle them with sand and re-pot. In this way I have saved many a plant of some of the best varieties. The best compost for pot *Roses* is half loam, half good rotten dung, and plenty of sharp sand; silver-sand is too fine. I have used for some time washed road grit, but river-sand, where it can be got, is best for *Roses*, which require to be potted tolerably firm. Pick off all flower buds, and keep down mildew, to which pot *Roses* generally are subject this month. I have found syringing with soap-suds and sulphur a good preventive. It is, however, rather too unsightly to syringe planted-out *Roses* with this mixture, as it stains the foliage. Cuttings may now be made of the ripened shoots. They should be removed at the point from which they grow from the old wood, and a slip of this wood should be removed with them, forming "a heel." The cuttings, about 3 inches long, should be inserted to the depth of 1 inch, round the edge of a pot filled with a light rich soil of leaf-mould and loam, with an abundance of silver-sand; and being well pressed round the roots, and well watered through the rose, should be put in a frame under a north wall until they have "callused." They should then be placed in bottom-heat under glass, and when rooted should be dignified with pots of their own, restored for a little while to heat, and then gradually inured to the air, grown on, and re-potted.—H. G.

Indoor Plant Department.

Although most kinds of indoor plants will now have completed their growth, they should nevertheless still receive abundance of water, be kept as far apart as possible, and have plenty of ventilation. Such as are in flower on front stages will still be benefited by a little shading. Introduce from frames, pits, and greenhouses successions of flowering and fine-leaved plants, and those turned out to accommodate them, if annuals or biennials, and seed sowing is not an object, should be discarded at once; perennials should be retained, and have their flower-spikes cut off, and the plants placed on north borders, or if necessary potted and placed in frames. Greenfly, thrips, mealy bug, and scale must be vigilantly searched for and destroyed. Large plants of *Camellias*, now that their wood is pretty firm and their flower-buds well developed, should be placed out of doors in shady sheltered places, and their pots should be fixed in position by means of three or four stakes driven into the ground. Syringe every fine afternoon, so as to keep them fresh and clean. Such plants as are not placed out of doors should be kept in cool, light, airy houses, their leaves, if dirty, should be washed, and the plants should be kept well watered. Young growing plants, if necessary may be re-potted, and also spring grafted plants. The ligatures may in nearly all cases now be removed from the latter; lateral growths on the stocks rubbed off, and part of the points of the stocks cut off if the scions are making good progress. Proceed with the grafting of *Camellias* as previously directed, and propagate an additional quantity of stocks of *C. japonica* from cuttings. If a portion of a north wall in any cool house can be devoted to this sort, its young shoots may be used every August for propagating for stocks. A close frame or a very gently heated bed is the most suitable place in which to strike them. If last year's cuttings, when rooted, have been potted singly and grown on favourably since, they may now be turned out into a cold pit, so as to get their young wood well ripened. They will then be in a good condition for "working" on next year. Pick decayed blooms off *Heaths*, and encourage the ripening of the wood by fully exposing the plants, either by plunging them out of doors in a bed of ashes, or by keeping them in pits or frames that are well ventilated night and day. No more pinching should be done now, unless it be to remove any useless growths in the centre of large specimens, which growths are generally very weakly and subject to disease. Do not water the plants overhead, but supply them liberally at the root, and pour plenty of water about the floor of the house or on the beds. Any young plants that were pricked off three in a small pot in the spring may now be potted off singly and placed in a cool frame. The earliest *Azaleas* should now have completed their growth and formed well-developed flower-buds; therefore remove them to cooler quarters that are light and well ventilated. Water *Azaleas* plentifully at the roots, but not overhead, and maintain a moist atmosphere by spilling plenty of water about the floor and on the stages. Indeed, towards the end of this

month all the plants, both early and late, should be transferred to cooler houses; but on no account put them out of doors. Pick off withered leaves, and destroy thrips, scale, and any other depredators that may make their appearance. No more pinching of the shoots should be done now; on the contrary, the maturation of the wood should be the main object kept in view. It is a curious fact, however, that young Azaleas may be treated for the first twelve or eighteen months after being grafted and re-potted, as cool stove plants, with beneficial effects in the way of securing a strong and rapid growth; and, if properly attended to in the matter of pinching, they will form excellent and stubby plants. Those plants that were grafted about the end of June and first of July, will now have taken well; therefore the ligatures should be cut away, and the plants re-potted from thumb-pots—which are commonly used for stocks that are to be grafted—into 60-sized ones, and still kept moderately close. Proceed with the grafting of these plants, if not already finished, as recommended last month. Re-pot and place in pits some Zonal Pelargoniums for late blooming, and pot off rooted cuttings of show varieties. Keep up a succession of Fuchsias.

Soft-wooded Plants.

Of *Gomphrena globosa*, have a good stock of plants, both in flower and coming forward; they may be treated like Balsams, but less liberally, and should be protected from heavy rains. Preserve some of the best flowered Balsams for seeding purposes; keep plants of them for late blooming gradually shifted as they require it, and keep the flower-buds picked off until a short time before they are required to open. Balsams, as well as Cockscorns and other *Celosias*, should be grown in cool pits, with the sashes removed during the day, and replaced, but tilted up, at night. Sow *Mignonette* in pots; thin out advancing plants, and shift them, if necessary, into larger pots without injuring their roots. Sow the latest batch of hybrid *Calceolarias*, and prick off or pot singly plants from previous sowings. *Cineraria* seedlings or off-sets should be shifted when necessary, using a rich soil for the purpose, and place the plants on a layer of gravel or ashes, in a frame with a north aspect. Pot on Chinese *Primroses*, using a light rich soil, and pinch and grow on moderately *Bouvardias* for winter blooming. Keep hybrid herbaceous and other *Begonias* as near the glass as possible, and shade them a little from bright sunshine. *B. Weltoniensis* is one of the best compact autumn blooming plants which we possess. When *Begonias* become pot-bound give them a little manure-water occasionally. Propagate this class of plants by means of seed and cuttings, but be careful not to cover the cuttings with a bell or hand-light, as they strike better without such assistance. Young *Hydrangeas* for September blooming should be kept moderately close and well watered; but old stocks that were potted in spring and since plunged out of doors, or which, having their roots cut round, are now lifted and placed in large pots, will also yield a great quantity of late blooms. Pot a few plants of the common and larger-growing varieties of *Musk* in rich soil, and grow them against a wall with a north aspect, for blooming between September and Christmas. Keep the different varieties of *Monochætum* in a growing temperature, and pinch them in no longer. Give *Chrysanthemums* plenty of manure-water, and take off and strike a few flowering points for dwarf plants. Tall plants produce the best single blooms, and pyramidal or mushroom trained ones the greatest profusion of flowers. *Nerines* that have done blooming should be kept moderately dry; and *Cyclamens* should be examined and watered a little more liberally than they have been, *Lantanas*, particularly one-year old plants, if kept pinched until now and grown on moderately, will have formed good plants that will continue flowering for a long time. Keep succession plants of *Coleus* in open frames, merely protecting them from wind and rain; in this way they grow freely and sturdily, and seldom require pinching. A few *Coleuses* may be propagated for keeping through the winter, as young well-hardened or half-starved plants keep better than old ones, and in spring under exciting treatment they readily take to growing and yield plenty of cuttings. The same remarks are equally applicable to *Iresines*, *Centaureas*, and *Alternantheras*. *Lilies*, as soon as done flowering, should be placed in a sheltered position out of doors, and watered a little until their stalks have withered, when the pots may be laid on their sides to prevent wet getting to their bulbs. Treat succession plants liberally, as well as those of *Campanula pyramidalis*. Where *Dahlia imperialis* is grown, the plants should have been kept out of doors from June till now, and then introduced into a little heat, when they will soon expand their flowers. *Salvias* form excellent winter-flowering plants, and old plants may be started now for that purpose, and young ones for winter and early spring use. In stoves, as in other plant houses, our chief object should be to get the wood well ripened. Ventilate well in the first part of the day, close early, and shade moderately.

Train out the shoots of *Dipladenias* along the roof. Store away in dry places *Achimenes* and *Gloxinias* that have flowered early, and grow on moderately *Gesneras* of the *Exoniensis* section. Transfer such *Allamandas* as have come well into bloom to the conservatory, where they continue longer in perfection than in warmer quarters. Thin out the shoots of *Bougainvilleas* as soon as the flowers are shed, preserving only such as are necessary for next year's work. Keep *Aphelandra Roezhi* in a growing condition; this is one of the best and most showy of winter-blooming plants. Some of the earliest started *Caladiums* may be permitted to go to rest, as may also early-bloomed plants of *Clerodendron squamatum*. Plants of *Euphorbia Jacquinæflora* and *Poinsettia pulcherrima* should be encouraged to make growth, and should be kept near the glass. The general stock of young plants may be re-potted and kept growing a little throughout the whole year. *Libonia floribunda* and *Sericographis Ghiesbreghtiana* should now be permitted to grow without further pinching; they will form good blooming plants for winter use. Preserve a young stock of *Torenia*s, *Pentas*, *Scutellarias*, *Centradenias*, *Thyracanthus*, &c., as well as of fine-leaved plants for decorating the front stages, baskets, and apartments. Most of the stove plants may now be increased by means of cuttings made of the half-ripe wood, as well as from seeds. Keep *Gardenias* in a vapour-bath, a mode of treatment that applies equally well to the *Eucharis amazonica*, and to *Marantas* and *Alocasias*. Stove aquariums should be kept clean from *Conferve*, as well as from the decaying leaves and flowers of *Nymphæas*, *Nelumbiums*, and other aquatic. In the case of Ferns, while the weather is fine, fire-heat may almost be dispensed with, provided Ferneries containing tender plants are shut up early. Shading should still be used during strong sunshine, for the young fronds are yet tender, and the sun's rays powerful. Abundance of water must be given at the roots, and a gentle syringing overhead to *Aspleniums*, *Polypodiums*, &c.; but *Adiantums*, *Nothochlaenas*, and *Gymnogrammas* prefer having their leaves kept dry. A moist atmosphere must be maintained, especially in the tropical Fernery. Thick shading must be used in the case of filmy Ferns, which, if in cases, may be assisted by green gauze, in addition to the ordinary canvas outside, or a thick coating of paint may be rubbed over the glass outside. They must be kept cool and in a moist atmosphere, and gently dewed overhead daily. Take off and wipe the bell-glasses used for covering them every day, or wipe the glass inside the cases, so as to preserve a sweet and genial atmosphere. Greenhouse Ferns require to be kept cool and in well ventilated houses or pits, and hardy Ferns in pots should be placed in frames having a northern aspect, or they may be set against a wall having a similar position. Seedling Ferns, which may now be picked up on the surface of pots, damp walls, paths, old stages, and amongst Orchids, should be selected, potted, or inserted in wire baskets, or they may be left where they are, for yielding fronds for associating with cut flowers during winter and spring.

Orchids.

Less water and shading will now be required in the case of such plants as have finished their season's growth, but *Masdevallias*, *Odontoglossums*, *Oncidium macranthum*, and many *Dendrobies*, which will now be growing freely, must have a copious supply, and as much light and air as possible during fine weather. *Cypripediums* should be syringed once or twice daily, and *Cattleyas*, *Lælias*, and other leathery-leaved species will be all the better for occasional spongings with clean tepid water. The bare surfaces of the pots should be covered afresh with living *Sphagnum Moss*, and plants in baskets should be overhauled and examined every two or three days, while those on blocks will require attention oftener. A little fire heat will be needful for the cool houses on cold nights, but air should still be left on night and day. Plants in flower, such as *Odontoglossums*, *Dendrobies*, *Cattleyas*, *Lælias*, and *Cypripediums*, may be removed to a drier house or to the conservatory, where they will last much longer in perfection than in an atmosphere heavily charged with moisture. Cleanliness should prevail in every department, and all pipes, boilers, and other appliances should now be seen to before sharp weather sets in. Now is a good time for carrying out any repairs not already attended to. Potting may still be done in the case of strong-growing species and imported plants. Now, too, is a good time to re-pot *Disas* that have finished blooming, using a fresh open compost of peat, leaf-mould, and living *Sphagnum*, with sufficient coarse sand or grit to keep the whole open and porous.—F. W. BURBIDGE.

Hardy Fruit.

The gathering and storing of ripe fruit now claims considerable attention. The temptation is strong to gather fruit before it is ripe, as every day the nearer it approaches to perfect maturity, the dangers to which it is exposed increase. Insects lurk in hidden places to devour it, and hosts of hungry birds hover over it, but once safely

stored it is secure. Still, it must not be gathered too soon. The last service the growing tree confers on fruits, is to fill them brimful of flavour, and if we sever the connection prematurely, this service cannot be rendered. The result is, the fruit becomes shrivelled, or preserves a tartness more sharp than agreeable. In no simple operation is the skill of the cultivator more severely tested, than as regards the right time and mode of gathering fruit. Neither too soon nor too late must be our rule. Each fruit has the right day, perhaps, its proper hour, to be gathered—a set time, in which it has reached the greatest perfection. If this be true, and it is, how often in our hap-hazard mode of harvesting, must we, as a matter of course, make mistakes. No doubt, as a rule, fruits are gathered too soon; still, it is possible, though less excusable, to err on the other side. There is hope of a fruit gathered too early. Many ripen more or less after being gathered, but a fruit once past perfection is comparatively ruined. In general terms, it may be stated, that no fruit should be allowed to drop from the tree, certainly no stone fruit. The experienced eye can readily detect the gathering signs of maturity; and just as the fruits are about to fall, the cultivator's hand should be found waiting to receive them. A word as to the time of day to gather fruits; this has often to be determined by convenience. But supposing a choice possible, early in the morning is the best time, when the nourishing dews or quiet coolness, and darkness of the night will have given the last touch of quality to the fruit; gather it before the sun warms or dissipates part of its lusciousness and flavour. The worst time to gather fruit is at noon, when the sun expends its maximum force upon it. No fruit should be gathered—none sent to the table—warm, nor must it be made cool by being iced; a sudden chill as well as a fierce heat, drives the flavour out of it. Flavour is a more fugitive quality in fruits than many seem to think. Hence the importance of these minute instructions. Fruit should be gathered tenderly and touched gently; the true cultivator is ever careful not to mar the beauty or blemish the flesh of his fruits, each bruise being a step towards decomposition. Gather the fruit for the day's consumption as early in the morning as possible, store it in single file in a cool place till wanted; dish it up with a profusion of fresh green leaves, and arrange it with taste and judgment, and in quantity proportioned to the number of guests, and it will be sure to be appreciated and enjoyed. In gathering for storing in the fruit-room use shallow baskets padded with cotton wool, carry and store the fruit in single layers, and it will keep well and go to table in its season perfect alike in form, appearance, and flavour.—D. T. FISH.

Kitchen Garden.

Potatoes in many places, in consequence of the retarding influence of spring frosts and the subsequent check caused by drought, are small, and the crop therefore light. Super-tuberation also is taking place amongst later crops to a considerable extent; and, in all cases where the skins of the tubers are sufficiently set, it would be advisable to take up the crop, but not to store it in large heaps at present. Although the main crops of Broccoli and winter Greens should have been planted last month, there is yet time to make a further planting for spring use, provided good plants can be obtained. They will not attain the same development as those planted earlier, but, wherever the Potato crop falls short, all vacant spots should be filled up, as the chances are, they will be found to be useful in spring. Make the last sowing of White Lisbon and Tripoli Onions; sow thickly, as they may be transplanted in spring; in fact, in all places where the Onion maggot is troublesome, this may be looked upon as the most reliable time to sow, so as to escape its ravages. This is also a good time to sow prickly Spinach for spring use. It delights in deep, rich, well-manured land; both this and previous sowings should be thinned out to about 4 or 5 inches apart, and, if necessary, the thinnings may be planted to furnish a succession. Wherever no provision has been made for a good supply of Parsley for use in bad weather, such should now be seen to; plants from the main bed may be lifted, the larger leaves cut off, and the roots planted in some warm sheltered place, where they can easily be protected by placing a frame over them. Hurdles thatched with straw form some of the most useful protections for this and other crops, and are usually available almost everywhere. A row of Parsley might also be planted at the foot of a south wall for the sake of early growth in spring. Late Peas now coming into bearing, considering the ordeal through which they have passed, are looking well, and are at present free from mildew. It is necessary that great care should be exercised in gathering the crop so as not to break any of the shoots or foliage. This has more significance now than early in the season, as upon its observance depends, in some measure, their continuous bearing. South borders will again prove useful for the purpose of sowing and transplanting such things as Endive, Lettuces, Radishes, &c. We have latterly had cooler weather, accompanied by moderate, but refreshing, rains, which have very much benefited everything, and the growth of recently planted crops will now be very

much accelerated. Keep the surface stirred among growing crops; never allow a weed to seed; and thus weeds will soon cease to be troublesome. Clear off all run-away crops the moment they are done with; the proper place for such matters is the pigstye, where what is not consumed will be quickly converted into excellent manure. Any bad smell arising from the process of fermentation will be neutralised by a free use of the long littery manure from the stables. In the same way any bad smells arising from the fermentation of short Grass, or other vegetable refuse, in the rubbish yard should be attended to with sprinklings of lime; burnt earth or dry earth of any kind is a capital deodoriser. If any symptoms of mildew should appear upon Cucumbers in frames, or on ridges in the open air, sprinkle sulphur freely amongst them.—E. HOBDAV.

How to Soften Hard Putty.—Amateurs who, for amusement, make themselves "handy" about their premises, sometimes adopt modes of doing work that would be repudiated by professed workmen, either because it was not the custom of the trade or that the work was dispatched too quickly. My object is to assist those who may sometimes try their hands at glazing. Those who have repaired broken glass in an old greenhouse or pit know well the labour of cutting out the hard putty without destroying the wood-work. After many trials, and with a variety of differently shaped tools with various success, I at last accomplished my end by the simple application of heat. My first experiment was with a soldering iron, when, to my great delight, I found the putty become so soft that the broken glass could be removed by the fingers and the putty be easily scraped away. All that is required is a block of iron about 2½ inches long by 1½ inches square, flat at the bottom, and drawn out for a handle, with a wooden end like a soldering-iron. When hot (not red) place this iron against the putty or flat on the broken glass, if any, and pass it slowly round the sides of the square. The heat will so soften the putty that it will come away from the wood without difficulty. Some of it may be so hard as to require a second application of the hot iron, but one experiment will give sufficient instruction to meet all difficulties.—C. J. C., *Catford Bridge*.

The Gardeners' Royal Benevolent Institution.—In reference to a "Head Gardener's" observations upon this institution (see p. 102), I should like to make one or two remarks. In the first place, the smallness of the pensions given deters gardeners from becoming subscribers, owing to the fact that they are not sufficient to exist upon now-a-days, whatever the original pensioners may have managed to do. Raise the pensions even at the cost of electing fewer pensioners at each half-yearly election, and as death makes vacancies, there will be fewer to pay until the requisite funds come in to give an increased sum per annum. By this means a greater inducement would be offered to gardeners to join the charity. I often peruse the reports of various benevolent societies, and I must confess that the gardeners' pensions are the lowest of any. Let each member put the question to himself—Is the miserable sum offered to live upon when old age comes, any enticement for the craft to give their guinea per annum? Let the committee make it to a gardener's interest to subscribe, and they will soon have an increase of members. The majority of gardeners have but few friends left to give them a helping hand after they have reached sixty years of age, and I certainly do hope that some scheme may be introduced, by which the pensions may be increased. There are, doubtless, many large-hearted subscribers, who, if they knew that there was an endeavour being made to give poor gardeners a trifle more, would only be too happy, in some cases, to double their subscriptions, and in others, to give some three or four shillings more per annum. In the latter case subscribers would not miss the trifling sum, and they would have the satisfaction of knowing what an inestimable benefit it was to the recipients.—C. D., *Chelsea*.

Darwinism Again.—A Darwin philosopher was brought before a justice on a charge of drunkenness. In defence, he said, "Your worship I am a Darwinian, and I have, I think, discovered the origin of my unfortunate tendency. One of my remotest grandfathers was an anthropoid of a curious turn of mind. One morning, about 4,391,633 B.C., he was looking over his store of Cocoanuts, when he picked up one for his breakfast in which the milk had fermented. He drank the liquor and got gloriously drunk, and ever after he always kept his Cocoanuts until fermentation took place. Judge, then, whether a tendency handed down through innumerable ancestors, should not be taken in my defence." Casting a sarcastic look at the prisoner, the justice said, "I am sorry that the peculiar arrangement of the atoms of star dust resulted in giving me a disposition to sentence you to pay a fine of five shillings and costs."

LARGE forests of the India-rubber tree have been recently discovered in Columbia, near the river Chucumagne.

THE HOUSEHOLD.

VARIOUS WAYS OF COOKING APPLES.

THERE is no article of food which can be prepared in such varied ways, and in such palatable dishes, as Apples. Whether eaten raw or cooked, this fruit is generally popular, and is equally desirable and nutritious for young and old; it may therefore be desirable to direct attention to some of the different ways in which it may be used. Apples that are to be employed for sauce should be pared, cored, and put into cold water unless cooked directly, to keep them from discolouring. Add a little water, cover closely, and cook gently, not stirring them until the whole are softened, or you will cook them in lumps; when soft, stir and mash, add a little butter, sweeten and strain through a colander.

Apple Souffle.—Stew the Apples as directed for sauce, adding a little grated Lemon peel and juice, and omitting the butter; line the sides and bottom of a baking dish with them. Make a boiled custard with one pint of milk and two eggs, flavouring with lemon and sweetening it to taste. Let it cool, and then pour into the centre of the dish. Beat the whites of two eggs to a stiff froth (they can be left out of the custard), spread them over the top; sprinkle white sugar all over them, and brown in the oven. The stewed Apple should be about half an inch thick on the bottom and sides of the pudding dish.

Apple and Tapioca Pudding.—Soak overnight a quarter of a pound of Tapioca; in the morning pour off the water, and add one quart and a gill of boiling water, sweeten, and flavour with grated Lemon peel and the juice of one Lemon. Take six or eight tart Apples, pare, core, and place in a pudding dish; fill the centre of each Apple with sugar; then pour the liquid Tapioca over the Apples, filling the dish, and bake in a hot oven until the Apples are perfectly soft. Serve cold with cream. If preferred, the Apples can be sliced into the Tapioca. If one desires to prepare it in haste, turn cold water on to the Tapioca, let it soak for fifteen minutes, then pour boiling water on, and stir it until it looks like thin starch.

Apple Meringue.—Pare, core, and stew ten good sized Apples in as little water as possible; sweeten and add a small piece of butter, put into a pudding dish, cover the top with the beaten whites of four eggs, sprinkle them thickly with powdered white sugar, and brown in the oven.

Apple Dumpling.—Make a nice crust, line a quart bowl with it, buttering it well; fill up the bowl with sliced Apples, sugar, grated Lemon peel, and Lemon juice. Cover with the crust, pinching the edges close together, flour a thick cotton cloth, and tie it closely over the top of the bowl, and set it into boiling water, but not enough to cover the top of the bowl. Boil two hours, not letting the water go below the boiling point, and keeping it well filled in as it evaporates. Serve with a sugar and butter sauce, or with sugar and cream.

Apple Pudding.—Grate ten large Apples, paring them first; add to them four table-spoonfuls of melted butter, eight of sugar, grated peel and juice of one Lemon, and the yolks and whites of six eggs beaten separately. Line a dish with puff paste, and bake like a custard pudding.

Apple Cobbler.—Pare, core, and slice twelve large tart Apples, add to them the juice of two Lemons, grated peel of one, sweeten to taste; stew very slowly for two hours; turn into a mould. When cold, serve with cream.

Apple Float.—Take one pint of stewed Apples; sweeten and flavour to taste. When cold, and just before you desire to serve, add the beaten whites of four eggs, stir thoroughly into the Apple; serve with cream and sponge cake.

Apples and Rice.—Core and pare as many Apples as will fill a pudding dish, stew them so that they are nearly soft. Boil half a teacup of Rice; when nearly soft, add sugar, salt, and a pint of milk. Place the Apples in the pudding dish, turn the Rice over them, filling up the core of each Apple with sugar before putting in the Rice. Bake until it is a nice brown. Serve with cream, or without any sauce.

Another Rice and Apple Pudding.—Boil two large spoonfuls of well washed rice in a pint of new milk; slice into it while boiling two or three Apples, pared, and a few currants or raisins. Simmer slowly until the rice is very soft, then add one well-beaten egg. Stir for a few minutes, and serve with cream and sugar, or a butter and sugar sauce.

Apples in Imitation of Ginger.—To three pounds of very hard Apples, take two pounds of loaf sugar, and a quarter of a pound of best white ginger. Put these in layers (having first sliced the Apples in eight pieces and cored them) alternately in a wide-mouthed jar. Next day infuse an ounce of white ginger, well bruised, in about a

pint of boiling water; let it stand till next day. Then put the Apples, that have been two days in the ginger, into a preserving kettle, and turn over them the water from the bruised ginger. Simmer slowly until the Apples look clear. Take great care not to break the pieces. If closely covered, over a slow fire, half an hour will cook them enough, without needing to stir them. Put into jars, and cover tightly while boiling hot. Let the bits of ginger remain in the syrup until it is served.

Rice and Apple Souffle.—Boil two table-spoonfuls of rice in half a pint of milk; add, when soft, the yolks of two eggs, and sugar to taste. Make a wall with it around the sides of the dish; stew some pared and cored Apples until soft, fill the centre of the dish with them, fill up the apertures in the Apples with candied sweetmeats or jelly, and cover the whole with the whites of the eggs, beaten to a stiff froth, and sprinkled thick with white powdered sugar. Brown in the oven, and serve with cream.—*Cultivator.*

Fruit in Tin Cans.—An impression prevails among those who freely use fruit put up in tin cans, that it is injured thereby, and this impression is in many instances correct. We have long contended that all preserved fruits and vegetables should be stored in glass, and that no metal of any kind should be brought in contact with them. All fruits contain more or less vegetable acids, and others that are highly corrosive are often formed by fermentation, and metallic vessels are considerably acted upon. Tin cans are held together by solder, an alloy into which lead enters largely. This metal is easily corroded by vegetable acids, and poisonous salts are formed. Many persons (according to the *Boston Journal of Chemistry*) are greatly injured by eating Tomatoes, Peaches, &c., which have been placed in tin cans.

Culinary Uses of the Papaw in Tropical Countries.—Your description of the Papaw in a late number of *THE GARDEN*, reminds me of what a treasure it is to the *cuisine* in a tropical climate, where meat cannot possibly be hung up to make it tender. In the West India Islands, where the Papaw abounds, its leaf or its fruit (I am not sure which) is rubbed well into the meat about to be cooked, and tenderness, otherwise unattainable, is produced at once. The leaf of the Papaw has a curious kind of odour, reminding me of our Fig-leaf's scent; perhaps, therefore, an infusion made from Fig-leaves might be of similar efficacy. I certainly have heard in the County Wicklow, of a turkey having been rendered tender by suspension in a Fig tree.—A. L., *Bala, North Wales.*

Fruit Eating.—A very mistaken idea found a lodgment in the minds of many, otherwise sensible persons, to wit, that summer complaints, the generic term under which the disorders peculiar to the season are known, are caused mainly by the use of fruit, and that the wise and safe plan is to prohibit its use altogether. This method, which neglects to take advantage of one of the most beneficial provisions for man's use, is detrimental to health. When fruit does harm, it is because it is eaten at improper times, in improper quantities, or before it is ripened and fit for the human stomach. A distinguished physician has said that if his patients would make a practice of eating a couple of good Oranges before breakfast, from February till June, his practice would be gone. The principal evil is that we do not eat enough of fruit; that we injure its finer qualities with sugar; that we drown them in cream. We need the medicinal action of the pure fruit acids in our system, and their cooling, corrective influence.—H.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Carrot Jam.—Boil a few Carrots quite tender, rub them through a cullender, afterwards through a sieve, and to 1lb. of pulp add 1lb. of lump sugar, boil it to a jam, and when nearly cold add the juice of two Lemons (strained from the seeds), and the rinds grated very fine, to that quantity of pulp. Choose deep-coloured Carrots.—L.

To Dry Plums.—Gather the Plums when not too ripe. Prick each one with a darning-needle in several places. Take half a pound of sugar to each pound of fruit. Melt the sugar with a little water; skim it thoroughly; then add the Plums, and boil for half an hour. Lift out the Plums, and boil the sugar for twenty minutes longer, or until it nearly candies, which you can tell by taking up a small quantity in a spoon and letting it drop down until it threads out in strings. Turn it over the Plums, and put them to dry in a cool oven, stirring them up every few minutes. When candied, put into boxes.

Walnut Jam.—Walnuts, taken in the same stage as that in which they are used for pickling, and made into jam, are an excellent laxative. The following is the recipe for making the jam:—Take fifty Walnuts in which the shell has not begun to form, prick them all over, and boil them in water till quite soft; strain the water off, put a clove in each, and stew them over two ounces of bruised ginger. Make a syrup of half-a-pint of water and two and a-half pounds of coarse brown sugar, stirring on the fire till all is melted; then put in the Walnuts and boil for twenty minutes, stirring to prevent them burning.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ROSES OF 1874.

WHEN the rosarian has carefully selected his Briar or Manetti stocks, and has planted them in rich soil, and in a favourable site; when he has seen them break luxuriantly in the following spring, and in the summer has "budded" upon them the varieties which he loves the best; when, some eight months afterwards, he has watched, in gladness of heart, the "eyes" swelling and bursting into life, the development of the leaves upon the straight strong stem (as round and as smooth as a ruler), the robust young bud atop—that egg which holds the loveliest of Flora's birds; and when, upon a clear, cold, cloudless night, somewhere about the 20th of May, he goes to bed, hopelessly sure that, waking to-morrow he will find every one of those delicate darlings crippled beyond recovery by frost—well, I will content myself with observing, lest I should be tempted to use violent language, unbecoming a peaceful florist, that the rosarian in question should refrain from presenting himself at this particular epoch of his existence as a study for the photographic artist, and that any friend of his, desirous of negotiating with him a considerable loan of money, had "better bide a wee." For a brief period the rosarian, usually the most agreeable of men, is not good company. The blackness, which has discoloured his Walnut trees, seems to have fallen upon his visage also, and not only in his Potatoes, but in his personal mien, we may discern a limpy droop. This great discouragement has come upon him with disastrous consequences in the last two summers, and never, I think, more generally or more grievously than in this present year. With the exception of mural Roses, which were sufficiently protected and sufficiently advanced to resist the vernal frosts, and which (Maréchal Niel and Souvenir d'un Ami, specially) produced their flowers in perfection, I have seen no Roses this season in their complete integrity. We have had Roses bright in colour and Roses symmetrical in shape—no lack of those flowers which we rosarians term "nice, pretty, little blooms," but the Rose in her royal grandeur has been nowhere seen. Having won the only silver cup for which I have contested, against growers of reputation, and having seen the Roses of our chief exhibitors, I know that my own have been as good as those of other folks, and their shortcomings, as to substance, may be gugged from the fact, that my victorious collection of three dozen were very comfortably accommodated in a box, which, on many happier occasions, I have seen well filled by two. And I would suggest, *en passant*, a hint for young exhibitors—never make a small boy ridiculous by putting upon his head a man's large wobbling hat; show your bantams in a diminutive basket, and your little Roses in a little box. Reverting to the season—although untoward, it has brought us important teaching; and sweet may be the uses of adversity, if we will observe and act upon them. Just as misfortune reveals to us the fidelity and fondness of our true friends, so 9° of frost towards the end of May will surely indicate the constancy and constitution of those Roses which alone can withstand the eccentric severities of our English clime. We may safely assert that all Roses which, despite the frosts of the spring and the drought of the summer, have worn an attractive, or even a respectable, appearance in the year 1874, are as weather-proof as Roses can hope to be, and should be found, accordingly, in every Rosarium, chosen first as maids of honour and ladies in waiting to attend upon the queen of flowers. I will, therefore, name, for the information of those who have not had any opportunities of acquiring it, the Roses which have most distinguished themselves in the perilous conflicts of our last campaign; and I strongly advise any young amateur, who is forming a collection, and may read these lines, to order them one and all. Alfred Colomb has shown that magnanimity in affliction which characterised his regal namesake, and though looking somewhat thinner than usual, and wearing sombre

purple instead of vivid scarlet, has been "every inch a king." No other Rose, among the As, has been Al, except Abel Grand, which has retained all the freshness of its clear pink complexion and all the fullness of its form. The Baroness Rothschild has been Queen of the Bs, "looking more like her own daughter" (as was said of Mrs. Nickleby by one of her lovers) in her diminished size, but, as ever, fairest of the fair. Not many great guns in the C battery—Camille Bernardin, Charles Lefebvre, Centifolia Rosea, Chabillant, and others hanging fire or bursting ingloriously. The best have been Countess of Oxford, a large well-shaped, rich-coloured Rose; and the pretty, pink, waxy, Tea-scented Catherine Mermet. Our old friends Caroline de Sansal and Celine Forestier have also been attractive as garden Roses. Doctor Andry and Dupuy Jamain have been best in the D division, but neither of them in true character. The Climbing Devonensis has been, and promises to be, very beautiful. Pursuing our alphabetical survey, we come now to four of the best Roses of the year, an admirable quartette in the key of E. Etienne Levet has been the finest bloom which I have cut this summer, and is, in my opinion, the most valuable of our recent acquisitions. I have budded it "in four places," as auctioneers say, when the bidding is brisk. Emilie Hausburg has bravely maintained, against bitter frost and broiling heat, her form and complexion; also Edward Morren has kept his symmetry though not his size; and Exposition de Brie, though disturbed in toilette by the inclement weather, has glowed with brilliant tints. François Michelin has now won his spurs (or spines) as a Knight of the Rose, and should have a place wherever Roses grow; and Felix Genaro has been one of the few who have presented themselves at the roll call in tolerable preservation after the great battle against General Frost and General Drought. Surely dear old Gloire de Dijon, "Glory de John," as cottagers name it, may complacently paraphrase Tennyson's "Brook":

Roses come, and Roses go,
But I bloom on for ever.

There is a plant, growing upon the church wall at Caunton, and fast growing into a timber tree, which had many hundred beautiful Roses upon it in the month of May, which has now several excellent flowers, blooming at intervals, and which will continue its inflorescence until December. I rejoice to think, when I contemplate this tree, that, however fidgetty and destructive the people and the Parliament may be, there are certain institutions which they never can disestablish, and that one of these is—Glory de John! S. REYNOLDS HOLE.

(To be continued.)

HOW MARKET-GARDENERS MANAGE MUSHROOMS.

Most people are acquainted with the mode of growing Mushrooms in sheds, cellars, tunnels, or in regular Mushroom-houses; but it is astonishing how few, even among gardeners, know anything about the way in which Mushrooms are grown for market. Between the end of September and April immense quantities of Mushrooms are disposed of, three times a-week, in Covent Garden, all of which are grown in the open air. Mushroom growing is, however, a somewhat uncertain matter in bad seasons; but, under favourable circumstances, if the ridges on which they are grown are in good order, they form one of the most remunerative crops. Mushrooms for market are all grown on ridges of manure, moulded over as in the case of indoor beds, and covered with a layer of loose litter, which is generally all the protection they get. They are built so as to form a series of successive ridges from 20 feet to 100 yards in length, and 8 feet apart from the centre of the one to the middle of the next. An open sheltered position is the most favourable for them, but they are also often made along the intervals between rows of fruit trees, where they do remarkably well. The manure used for making them is ordinary stable-dung, from which the most strawy portion has been shaken out with a fork, and laid aside for covering the beds when completed, or for other purposes, and turned once or twice so as to sweeten it, and prevent it as much as possible from heating; for, the fresher it is when used the more dependence there is on it. When the manure has been prepared the

ground is selected, levelled, and cleared of all other crops. It is then lined off into breadths 6 feet apart, with a space of 2 feet between them, lines being drawn with a hoe, and wooden pegs, from 2 to 3 feet long, inserted firmly in these lines a few feet apart, to mark the place after the hoe-lines have been obliterated by trampling and wheeling barrows across them. The manure, being now moderately short, sweet, and fresh, is carted alongside the selected piece of ground, if it has not been previously prepared there, and some men are then set to wheel it along the rows, whilst others build it very firmly into ridges with forks. It is the 2-foot wide space that forms the basis of the ridges, which are made at first about 2 feet high, or a little more, and bluntly tapered towards the top. They are then left exposed for some days before being spawned, so that the heat may subside to about 80°, which is readily determined by sticks inserted in the litter being drawn out and felt with the hand. If the heat gets strong, the ridges are immediately turned down, so as to form two out of the one, in order to cool the manure and prevent a violent fermentation. This is no uncommon occurrence, for we frequently see whole fields in August and September so overturned after having been put right. Now the use of the pegs is more than ever apparent, for they prove infallible guides, without any additional trouble, in lining off for the reconstruction of the ridges. When the heat has subsided to a proper temperature the beds are spawned on both sides. Market gardeners formerly made their own spawn, but now they find that they can purchase it much cheaper than they can make it, consequently they buy their spawn. They break the cakes up into pieces from 2 inches to 3 inches square, and these are inserted in three rows along each side, placing them pigeon-hole fashion, and from 9 inches to 1 foot apart in the rows. After being spawned, a layer about 3 inches in depth of mould is placed over the manure, and made very firm thereon by means of beating with the back of the spade; indeed, the ridges are commonly now watered through a water-pot rose, and again beaten very firmly and the surface left smooth and even. All is now left alone for a few more days, when, if the inside is not likely to get too hot, a loose covering of litter is applied over them, and increased in thickness a short time afterwards. This completes the ridges, which usually come into bearing about eight or ten weeks after being spawned. The first ridges are made about the end of July and 1st of August, and the main series in the latter part of August, and in September, whilst some are made as late as October. It is not altogether to form a succession that the ridges are made at intervals, but because it would be a difficult matter to get fresh dung sufficient to make many beds at one time, nor could the labour be conveniently spared all at once. Moderately dry and frosty winters are very beneficial to the Mushroom crop, but dull and damp weather is equally detrimental, hence the great risk they incur. Mr. Steel, of the Fulham Fields, informs us, that he once knew a most successful Mushroom grower, a friend of his own, to lose as much as £500 in one season, owing to the failure of the crop by reason of bad weather. Last year many of the growers did not nearly clear their expenses, because the winter was a continuous dull and rainy one, which soon rotted the spawn and rendered the ridges barren. In hard frosty weather additional protection is applied in the way of more litter, and to guard against wet, the beds are covered with mats pegged on either side with old Tomato stakes, or held in place by means of boards, stones, slates, bricks, or any other heavy materials; the same protections are also used to prevent the strawy litter from being scattered by the wind. The frost can thus be excluded, the wind prevented from doing irreparable damage; but, notwithstanding all these coverings, the cold rains find their way to the interior, and act with deadly effect upon the spawn. Even before the beds are spawned, and after that time and before being moulded over, they are covered with mats to exclude wet. We never yet knew out-door beds to be artificially watered, except at moulding time; nor yet have we seen them in a bearing condition at midsummer. In gathering the Mushrooms the rank litter is carefully removed by one man, and after him come others with baskets in which the Mushrooms, are put, and following the pickers is another man replacing the covering, for it is an important point not to permit the ridges

to become much exposed at any time. After April, or the 1st of May, they are seldom any good, consequently they are then uncovered and entirely removed to be spread on some piece of ground about to be dug over, or carted into one solid heap to await such an opportunity of being committed to the soil. This manure, being thoroughly decayed, is in excellent condition for feeding gross and quick growing plants, such as Vegetable Marrows, Tomatoes, Lettuces, Cauliflowers, Celery, or French Beans, and is much relished by them. Mr. Geo. Steel, however, instead of removing his Mushroom beds as soon as they become exhausted, uncovers them and plants his earliest Tomatoes on either side of them, and, as they advance in growth, he pegs them to the ridges. As this is a warmer place for Tomatoes than the open border, Mr. Steel generally gets ripe fruit from them a week earlier than he does from any other plants in his extensive range of garden ground. Mr. Dancer, of Chiswick, grows Mushrooms in ordinary frames, and sometimes with extraordinary results. In autumn, winter, or spring, the Mushrooms do well grown in this way, but in the summer time they do not repay the trouble and cost incurred in producing them; for, Mr. Dancer tells me, they come up small, scantily, and irregular, and no sooner do they appear above the surface than they turn bad, no matter how carefully tended. His mode of culture is as follows:—Good fresh litter is selected, laid in a heap, and turned, to sweeten and ameliorate it. A trench is then cast out as for a Cucumber bed, 5 feet wide, and 2 feet deep, and this is filled with the prepared manure, which, after it has subsided to a proper temperature and wooden frames placed thereon, is spawned, and afterwards earthed over with 2 inches deep of mould. The sashes being thus put in position, are covered over with two or three folds of mats or a 4-inch thick layer of litter, held in its place by means of boards laid across it. In these frames, so darkened, the Mushrooms appear in two months or less, and continue in good bearing for the next three or four months. Mr. Livermore (Mr. Dancer's foreman) informed me that from one plot of these frames, including four large sashes, he gathered four half-sieves of Mushrooms in one week. This bed, instead of having the fermenting material buried in a trench, was built above ground, precisely in the same manner as a common hot-bed, and was little shaded by the neighbouring fruit trees. F.

HERB CULTIVATION AT MITCHAM.

MITCHAM has long been celebrated for its herb fields, from which the London herbalists derive their Mint, Sage, Liquorice, and similar herbs. Of these, as a rule, distillations are made by the growers, and they are disposed of in a semi-refined condition, or the herbs themselves are brought into market as soon as they are harvested.

Chamomile.—To this several acres are devoted, the double-flowered kind being preferred on account of the weight of the produce; but both single and double sorts are grown. In March, old and somewhat "spent" plantations are broken up and the plants divided into good-rooted slips, which are planted in well prepared ground in rows 2½ feet apart, and 2 feet asunder in the rows. A common practice, however, is to plant as thick again as this, and to thin out the plants afterwards to the distances just named. The plantations are intercropped with Lettuces in spring. As soon as the blooms begin to expand, they are fit for gathering, and from that time, as long as they yield sufficiently to pay, the flowers are gathered several times in a season by women, who are either paid a regular day's wage, or a penny, or thereabouts, per pound for picking.

Lavender.—This is extensively cultivated at Mitcham, both farmers and cottagers bestowing special attention on it; and this district presents a lovely sight in the last fortnight of July, when the different fields of it are in full bloom, the air for miles around being loaded with its fragrance. Lavender is increased by means of rooted slips, planted out, in rows about 18 inches apart and half that distance asunder, in March or April. Sometimes the sets are planted as wide in the row as the drills are apart. For the first year the produce amounts to but little; and, therefore, Parsley or Lettuce is planted between the rows. As soon as the plants have grown sufficiently to become crowded, every alternate row, and also every alternate plant in the rows left, are lifted—say in spring—and transplanted into another field, so as to form a new plantation. Thus the plants stand 3 feet apart each way, or 3 feet one way and 18 inches the other.

Coleworts, Lettuces, or other early and quickly matured crops, are raised amongst the Lavender in the early part of the year; but, after June, all such catch-crops are removed. The flowers are usually harvested in the first fortnight of August, and, as has been stated, are distilled at the farm on which they are grown.

Liquorice.—This was once largely grown at Mitcham, but although it is still grown in considerable quantities, it is not now so extensively cultivated there as formerly, on account of the cost attending its culture. It entirely occupies the ground for three years, and during that time requires great attention in the way of cleaning, besides the ultimate cost of trenching out the roots, or rather, underground stems. The ground being deep, is heavily manured in autumn or winter, when it is trenched and laid up in ridges, in a rough state, till spring. It is then levelled, marked off in drills about 2 or 3 feet apart, and some 3 or 4 inches deep, and in these the sets are planted in March. The sets consist of finger-length pieces of the old root-stems, each containing an eye or two. During the first year the ground is usually intercropped, as is also the case in the earlier portion of the second year; but after the middle of the second summer, and throughout the whole of the third year, the Liquorice requires all the room. When the stems are matured in the autumn of each year, they are cut over close to the ground, and if time can then be spared, the soil between the rows is forked over, some well-decayed manure being occasionally worked into it at the same time. The lifting of the crop, which usually takes place in the end of the third season, is a difficult operation, involving much labour. A deep trench is cast out, lengthways, alongside the first row, and by means of forks, pulling-ropes being even sometimes employed, the root-stems are extracted. In this manner the whole of the rows are treated, until all are successively lifted. The roots may then be stored in sand or pits, like Beets, Carrots, or Potatoes. Growers of Liquorice do not always harvest the crop; on the contrary, they sometimes sell it as it stands in the field, and the purchaser lifts it himself.

Mint.—Both Spearmint and Peppermint are largely grown at Mitcham, particularly the latter; indeed, this crop ranks second in importance only to Lavender. It is first planted in rows 13 inches apart each way, and in the end of the next two seasons it is ploughed in. The plantations are kept free from weeds during the summer by means of hoes; and about the end of the first week, or during the second week of August is the usual time for cutting Mint for distillation. In the Fulham Fields, and in other districts in which market-gardening is carried on, Mint is largely grown for sale in a green state. For this purpose the dampest piece of ground is selected for its culture, if it is to be a permanent plantation, but it will grow in almost any soil. It is planted in rows a foot apart, and the ground is intercropped the first year, but afterwards it runs through the soil in such a way that it becomes a complete mass of under-grown stems and roots. It is cut and bunched for market as required, the greatest demand for it being during the Pea season. It is also forced in large quantities. I have seen a range of 43 light frames filled with Mint alone. These beds are made up in December or January, when the ground they occupy is excavated to a depth of 20 inches, and filled in with fermenting manure packed firmly. A few inches deep of soil are then added, and in this the Mint roots are thickly planted. Linings of manure are also placed round the frames, the sashes during the night and in cold days being also covered with it.

Poppies.—Of the white kind several acres are grown. They are sown in rows in spring, some 20 or 24 inches apart, and require no further care, beyond a little thinning and cleaning, till August, when their seeds ripen.

Sage.—This forms an important crop, which, under favourable circumstances, is pretty remunerative; the stalks being cut over, bunched, and sent to market at once. New plantations are formed with rooted slips, obtained by dividing the old plants; they are inserted, late in spring, in rows 1 or 2 feet apart, and about a foot asunder in the row. During the first season Parsley or Lettuces forms an inter-crop, which also occupies the ground during the earlier part of the succeeding ones. Except hoeing and cleaning, the plantations need no care so long as they continue in a thriving condition; and, when the lines get broken, and blanks and sickly plants occur, the plantation is broken up. Both the reddish and green-leaved kinds are cultivated.

Squirting Cucumbers.—These are raised in frames, like Vegetable Marrows, and are planted out, about the end of May, in rows some 4 or 6 feet apart, and 4 feet asunder in the row. They flower and fruit at the same time, and the fruits are gathered before they are ripe, otherwise a mere touch would burst them. The fruits are usually distilled by the growers.

NATURAL SELECTION.

In this matter Nature (says Prof. Tyndall, in his address delivered before the British Association at Belfast) gives the hint, man acts upon it, and by the law of inheritance exaggerates the deviation. Having thus satisfied himself by indubitable facts that the organisation of an animal or of a plant (for precisely the same treatment applies to plants) is to some extent plastic, he passes from variation under domestication to variation under Nature. Hitherto we have dealt with the adding together of small changes by the conscious selection of man. Can Nature thus select? Mr. Darwin's answer is, "Assuredly she can." The number of living things produced is far in excess of the number that can be supported; hence at some period or other of their lives there must be a struggle for existence? and what is the infallible result? If one organism were a perfect copy of the other in regard to strength, skill, and agility, external conditions would decide. But this is not the case. Here we have the fact of variety offering itself to Nature as in the former instance it offered itself to man; and those varieties which are least competent to cope with surrounding conditions will infallibly give way to those that are most competent. To use a familiar proverb, the weakest goes to the wall. But the triumphant fraction again breeds to overproduction, transmitting the qualities which secured its maintenance, but transmitting them in different degrees. The struggle for food again supervenes, and those to whom the favourable quality has been transmitted in excess will assuredly triumph. It is easy to see that we have here the addition of increments favourable to the individual still more rigorously carried out than in the case of domestication; for not only are unfavourable specimens not selected by Nature, but they are destroyed. This is what Mr. Darwin calls "Natural Selection," which "acts by the preservation and accumulation of small inherited modifications, each profitable to the preserved being." With this idea he interpenetrates and leavens the vast store of facts that he and others have collected. We cannot, without shutting our eyes through fear or prejudice, fail to see that Darwin is here dealing, not with imaginary, but with true causes; nor can we fail to discern what vast modifications may be produced by natural selection in periods sufficiently long. Each individual increment may resemble what mathematicians call a "differential" (a quantity indefinitely small); but definite and great changes may obviously be produced by the integration of these infinitesimal quantities, through practically infinite time. If Darwin, like Bruno, rejects the notion of creative power acting after human fashion, it certainly is not because he is unacquainted with the numberless exquisite adaptations on which this notion of a supernatural artificer has been founded. His book is a repository of the most startling facts of this description. Take the marvellous observation which he cites from Dr. Craiger, where a bucket with an aperture, serving as a spout, is formed in an Orchid. Bees visit the flower: in eager search of material for their combs they push each other into the bucket, the drenched ones escaping from their involuntary bath by the spout. Here they rub their backs against the viscid stigma of the flower and obtain glue; then against the pollen-masses, which are thus stuck to the back of the bee and carried away. "When the bee, thus provided flies to another flower, or to the same flower a second time, and is pushed by his comrades into the bucket, and then crawls out by the passage, the pollen-mass upon its back necessarily comes first into contact with the viscid stigma," which takes up the pollen; and this is how that Orchid is fertilised. Or take this other case of the *Catasetum*. "Bees visit the flowers in order to gnaw the labellum; on doing this they inevitably touch a long tapering sensitive projection. This, when touched, transmits a sensation or vibration to a certain membrane, which is instantly ruptured, setting free a spring, by which the pollen-mass is shot forth like an arrow in the right direction, and adheres by its viscid extremity to the back of the bee." In this way the fertilising pollen is spread abroad. It is the mind thus stored with the choicest materials of the teleologist that rejects teleology, seeking to refer these wonders to natural causes. They illustrate, according to him, the method of Nature, not the "technic" of a man-like artificer. The beauty of flowers is due to natural selection. Those that distinguish themselves by vividly contrasting colours from the surrounding green leaves are most readily seen, most frequently visited by insects, most often fertilised, and hence most favoured by natural selection. Coloured berries also readily attract the attention of birds and beasts, which feed upon them, spread their matured seeds abroad, thus giving trees and shrubs possessing such berries a greater chance in the struggle for existence.

In Sweden gardening forms a part of the educational system. Upwards of 2,000 schools have gardens for planting attached to them, and the teachers of elementary schools are obliged to learn gardening.

NOTES OF THE WEEK.

— *BRUGMANSIA SANGUINEA*, Mr. Ellacombe informs us, is now flowering very freely in his garden at Bitton, near Bath, the plants having remained in the open air unprotected for the past dozen years.

— THE plants called Loco and Rattleweed in California, and which have proved destructive to large numbers of horses and cattle which had eaten them, are pronounced by Dr. Gray to be *Astragalus Hornii*, and *Astragalus lentiginosus* var. *Fremontii*.

— MUSHROOMS spring up in a night and cover meadows and pastures so plentifully that the business of gathering them has lately been quite brisk. Cheap as they have been on account of their superabundance, many of the Mushroom-gatherers have made considerable sums of money.

— MR. ELLACOMBE informs us that the *Eucalyptus cordata* which grows against Mr. Symes's house at Balmuto, Kirkcaldy, fruits and flowers freely, and reaches to the top of the house. As we have not noticed *E. globulus*, the much-talked-of fever Gum tree, display such vigour in the south of England as *E. cordata* does in Scotland, it is probable that the last-named plant is most suitable for cultivation in this country.

— AT Abney Hall, Cheadle, the residence of Sir James Watts, there is now in flower a plant of the Dove Orchid, bearing six spikes of flowers. Although said to be comparatively seldom met with in blossom, it flowers annually at Abney Hall, where it is treated in no way different from other stove plants. Its flowers are very interesting, and the so-called dove wings are especially pretty when viewed through a magnifying glass. Single flowers of this plant, mounted on wires, are found to be useful for bouquets.

— THE French husbandmen may rejoice (*Galignani* remarks), as the *Phylloxera* seems disposed to amend its ways, if not to disappear altogether. The following interesting information on that subject is from the *Midi* of Nîmes, and seems of a character to encourage Vine-growers. M. Mourret writes thus to that journal:—From all sides, and from the men most competent to judge, I hear it said that many Vines considered as dead are returning to life in our arondissement.

— MUCH has been said at various times in praise of *Eucharis amazonica*, but not one word more than it deserves. At Abney Hall, Mr. McKeller, has three plants of it under his care at the present time, beautifully in flower. On the first plant there are thirty-nine spikes or flower-heads; on the next, thirty, and on the third, twenty-seven heads. Before the plants threw up their flower-spikes, they were kept dry for a considerable time, but not so dry as to injure the health of the foliage. There seems to be no difficulty in growing this plant and flowering it well, and it is one of the most beautiful of *Amaryllidaceous* plants.

— MR. CHARLES MOORE, who recently brought a good many valuable and very novel plants to this country from the South Sea Islands and Australia, returns to Sydney by the next mail, having visited many of the best botanic gardens and nurseries in Europe, and selected an immense collection of valuable and rare plants for the Sydney Botanic Garden, which is said to be one of the most beautiful in the world. Mr. Moore, whom many of our readers will know as the brother of Dr. Moore, of Dublin, informs us that he was everywhere most kindly received, and that both directors of botanic gardens and the chief European nurserymen placed their collections at his disposal.

— THERE is now coming into bloom, for the second time, in the open border, at the gardens of the Royal Irish Society, at Glasnevin, near Dublin, a most beautiful deep rose-coloured variety of the *Crinum* family, figured without description (which was lost in going through the post) in the number of the *Botanical Magazine* for the current month, and raised by the learned Curator of the Gardens, Dr. David Moore, from seed received from the higher mountains of Natal. This plant has now withstood the Dublin winters without any protection for the last four years, and may thus be considered perfectly hardy in this country, as the Dublin climate in winter is quite the reverse of mild. This plant is likely to be a grand acquisition to our hardy plants.

— Two new flower markets were opened in Paris this month. One of these occupies all the Avenue des Farnes between Avenue de Wagram and the Rue des Acacias, and contains ninety-one places of six square metres each; it is to be open on two days in the week. The other is in an open space at Ospincur; it contains ninety-nine places of the same dimensions, and is to be open three times a week. The rent for one of these places is only equal to sixpence a day, with a charge of fourpence per month extra for sweeping, &c. The two markets will consequently bring in to the city funds between four and five pounds each day that they are open. These markets are constructed in the simplest manner, with light roofs supported on thin iron colonnettes, or moveable standards, according to the

nature of the locality, and while they give a great air of gaiety to the city they supply employment to a large number of persons. Would not Trafalgar Square and others of our open spaces be very suitable for flower markets of this kind?

— MR. PULHAM is engaged in the construction of several very extensive rock-gardens in the north—at Smithall's Hall, Bolton, at Hutton Hall, Gisborough, and at Pierremont, Darlington.

— THE lovely little *Irid Anomatheca cruenta* is well worth the attention of those who have dry gravelly banks or rock-work to decorate. It lasts long in bloom and is quite hardy in situations such as those just indicated. Plants of it have been finely in flower at Messrs. Hooper's, Covent Garden, during the past month.

— THE singularly beautiful *Gladiolus brencleyensis*, by far the most effective in the tall-growing section, is now beautifully in flower in the cottage gardens all along the Suffolk coast. In Belle Vue Park, Lowestoft, there is a magnificent bed of it. The light sandy soil, both there and at Yarmouth, seems to suit both this and other *Gladioli* perfectly.

— THERE are now some remarkably fine examples of the new Potato "Climax," at Messrs. Hooper's, Covent Garden. It is a large handsome root, distinguished from many of the newer Potatoes by its good eating qualities, and is considered by many to be the best of all the new American Potatoes, so far as they have been as yet tried in this country.

— THE late spring frosts having spared some Shiraz Apricots, we have been enabled to taste this variety, and to confirm what has already been said of it. It is, without doubt, the best of all Apricots; its flesh, which is melting and sweet, has but little consistence. When better known the Shiraz must occupy a prominent place among Apricots; but it has one fault, and that is, it is not a handsome fruit on the table; it also travels badly. Nevertheless, it is a variety which no garden should be without. Such is M. Carrière's opinion of this Apricot, as given in the *Revue Horticole*. Do any of our readers grow it?

— It is stated that there are 2,300,000 Vineyard proprietors in France; that there are only eleven departments which do not grow the Vine; that twenty cultivate Grapes for home consumption, and fifty-one for export. Most of the fruit is intended for the wine-presses; but the best dessert Grapes also come from France. The famous Chasselas de Fontainebleau (Royal Muscadine) are grown in the two little townships of Thomery and Champagne. The Vineyards there produce an annual crop of about 2,000,000 pounds, of which the capital consumes about 1,000,000 kilogrammes, while the rest is exported to England, Austria, and even Russia. The trade in Grapes, foreign and home grown, amounts in value to several million francs a year. This, of course, does not include Grapes used for wine.

— THE August number of the *Florist* contains excellent coloured representations of two of the finest of the new hybrid Clematis raised by Messrs. Jackman & Son, of Woking. These are *Stella*, an eight-sepal variety, nearly white, with a band of purplish-lilac down the centre of each segment, and *Fair Rosamond*, a fine bluish-purple flower, the centre of the segments of which are tinted with claret-purple. There is also a second coloured plate containing three varieties of *Cyclamen persicum*, raised by Mr. Little, of Twickenham, a well-known amateur cultivator of *Cyclamens*, to which we have frequently alluded in THE GARDEN. These are *Royal Purple*, a fine massive flower of a rich purple colour; *Rose Queen*, also a fine variety, with purplish-crimson flowers; and *White Perfection*, a pure white-flowered form with nicely rounded segments.

— WE have lately seen some fine samples, grown by Mr. Knight, at Floor Castle, of *Monstera deliciosa*, the very ornamental tropical Aroid, which is often classed among edible fruits. Its "prickles" must, however, prevent this ever taking a place as a useful tropical fruit. Many who know this merely as a fine foliage plant, or as a fruit-producer when grown in a warm humid atmosphere, may not be aware of its adaptability as a balcony plant during the summer months, and a useful decorative plant for a warm drawing-room or front hall during the winter season. It is often used along with some of its larger-growing allies as a sub-tropical plant throughout the summer, and has a noble appearance when tastefully grouped along with lighter and more graceful forms of vegetation. Just now a fine robust specimen is flowering freely in front of a confectioner's shop in Lowndes Square, where its great ivory-white spathes and bold lacinate foliage attract a large amount of attention from pedestrians. It is planted in a large square tub, and looks as if it had occupied that position for some years. When grown under cool treatment the plant acquires a short-jointed sturdy habit of growth, and does not extend so rapidly as when grown in a hot stove; nevertheless, it is none the less attractive, and deserves more general culture in the way suggested.

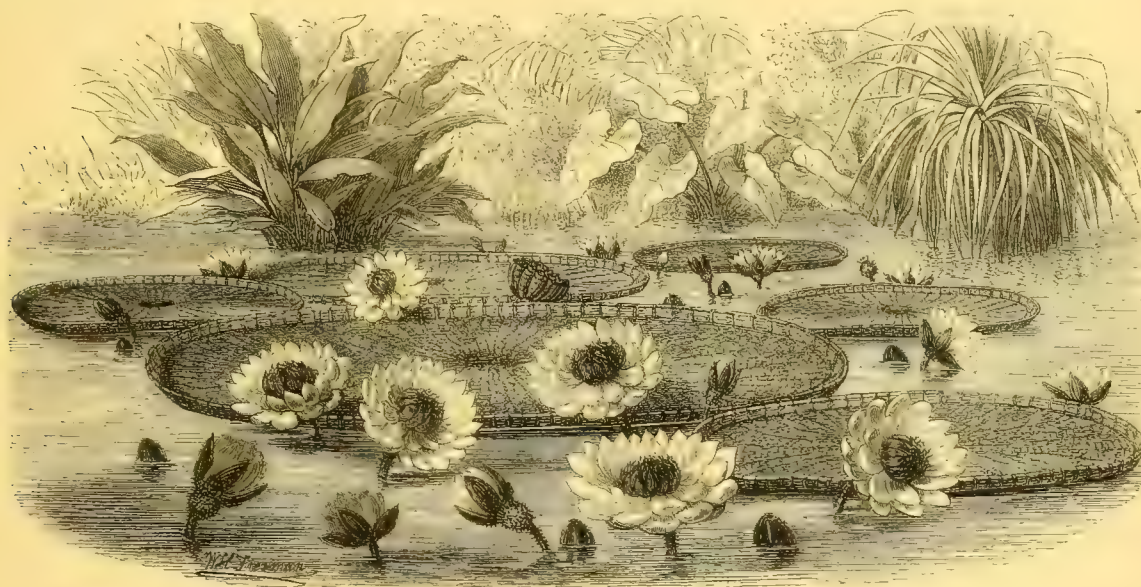
THE INDOOR GARDEN.

CULTURE OF THE GREAT WATER LILY.

(VICTORIA REGIA.)

THIS is one of the largest and most interesting of all tropical aquatics, although its indoor cultivation is almost necessarily limited to perhaps, less, than half-a-dozen gardens in this country, if we except Oxford, Kew, Sheffield, Birmingham, and other public gardens. Its culture with us is expensive, requiring a large house and tank from 15 to 30 feet in diameter, and a costly heating apparatus, to say nothing of minor details, all more or less troublesome and costly. In face of these facts, the question naturally arises, whether it would not be better to expend a hundred pounds annually on hardier plants, fine trees, fresh green lawns, or in the fruit garden, rather than expend twice that amount or more on the culture of a single plant, which, however beautiful, lasts only a month or two in perfection. No doubt, this question has occurred to many before, as the plant rarely finds a place in private gardens. Apart from its expensive surroundings, however, the indoor culture of this plant is very simple. Although not naturally an annual, it flowers much better when

to have the young specimen planted in a coarse basket of wicker-work, using a rich compost of sandy-loam and well rotted hot-bed manure. This basket and its contents would not take up much room in a shallow tub or tank in the plant stove, and when the mild weather arrived the plant could be gradually hardened off, and the basket and its contents might then be placed in a suitable position in the open-air tank. The *Victoria regia* is readily propagated from seed sown during the winter months, or nearly as soon as it is ripe, and but little difficulty would be experienced in obtaining a plant, early in the spring months, for experimental purposes, from Kew, Chatsworth, or other large garden where it is grown. The plant is a native of Guiana, where it occurs in the Parana River, and South America, being found abundantly in some of the sheltered tributaries of the Orinoco and also in those of the Amazon. In its native habitat the flowers acquire a richer rosy tint than in our hot-houses here at home, where it is a rarity to see more than one of its delicately-perfumed flowers open at the same time. The leaves of this species are frequently 6 feet, or even more, in diameter, and float on the surface of the water, being supported by a beautiful net-work of hollow veins. The under surface of the great table-like expansion is of a rich purple colour, the upper surface



Victoria regia in flower.

so treated in this country, and seedlings are raised every winter. These are simply planted out, in the spring, on a mound of richly manured compost, the temperature of the surrounding water being kept as near 80° as possible, by means of hot-water pipes which are conducted round the bottom of the tank. In order to keep the water fresh and sweet, some system must be adopted to secure circulation, and this may be obtained by having water constantly flowing into the tank on one side with an outlet at the other. Some cultivators employ a small overshot wheel, which is turned by the inflowing water, and at the same time keeps the whole body of the water in constant motion. This appliance is, however, not absolutely necessary, as the inlet and outlet pipes, with a constant supply of fresh water, is all that is requisite to ensure success. There are, however, many situations out-of-doors in which this plant will not only make a luxuriant growth, but produce flowers during the summer months. It has already flowered at several places in England, where tanks have been formed to receive the condensed steam from the engines of water-works or manufactories, and in favourable situations like these it deserves a fair trial. The main elements of success consist in having a strong healthy well-established plant ready for planting out in the latter end of May or beginning of June, and, in order to prevent the growth being checked, it would be advisable

being deep green. The plant is just now in bloom at Kew and elsewhere. B.

DOUBLE CHINESE PRIMROSES.

THESE are more useful, though hardly more beautiful, than the single varieties. For pot plants the latter are as good as the former, and perhaps even more showy, and assuredly far easier grown. But they have a weakness for falling off the stems when cut for vases and bouquet work, whereas the double ones stick to their stalks well, and will keep a week or more in a damp bouquet, and at least a fortnight in water. They are also quite different in form, as, instead of a single flower, we have a ball—soft, lasting, pure—of white, purple, or other exquisite colour. As a rule—though a new race has of late years been introduced that may be held as more or less an exception—the double Chinese Primroses do not seed nor come from seed. They are perpetuated and propagated by division and cuttings, or Irish cuttings, as they are called—that is, single shoots with a small piece of root-stock adhering. If the latter are used, they should be potted deeply, so that the crown of the plant should almost rest on the soil. Such cuttings, with a root, cannot always be had without splitting the main stem of the plant into as many pieces as there are crowns. The modicum of root secured at the base of each piece is retained chiefly for a temporary object: it supports the plant until it emits fresh roots, just at the base of the

leaves. When this is accomplished, the lower roots and the lanky stem alike may both be dispensed with, and the plant treated like a cutting; or, if the old stem continues healthy, heals over soundly, and fresh roots are produced at the base, the whole may be left, and the plants potted on, with the old and new parts complete. But the old stem is likely to canker afterwards, and it is safer practice to remove it entirely with the knife, just under the main roots at the base of the leaves. If propagation by division is adopted, the plants should be earthed up right to the base of the leaves, as soon as they are out of flower, with light sandy soil, and encouraged to grow rapidly for a month or six weeks in a temperature of 55° to 60°. They must be watered sparingly, as the earthed-up stems are liable to rot. To facilitate the rooting of these shoots, it is well to peg each down separately, or even layer them. When rooted, shake out the plants and pot each shoot separately, and also make the most of the stem and bottom roots, if sound, by sub-dividing them, as already advised. Where large plants are desired, the plants may be treated as above, and then, when the branches left on the original plant are rooted from 3 to 6 inches, shift them into a larger pot; or the layering, &c., may be dispensed with, and the old plants simply potted into larger and somewhat deeper pots than before. In this mode of culture great care must be taken to have the drainage perfect, and also to use some crocks or pieces of charcoal around the old stem, as these plants are marvellously impatient of damp, especially in a dormant state, and stagnant water is sure and certain death to them at any time. These old crowns are apt to give way in the midst of their beauty, and for this reason I prefer making up a large plant, from a number of separate and independent ones, a month or so before they are wanted, to growing large plants as above. Besides, double Primroses never look better than in 6-inch or 8-inch pots; and, with good culture, a single crown may be grown large enough to furnish either in about ten months. Cuttings, to those who are pretty skilful propagators, is the most expeditious mode of increasing these charming Primroses. Perhaps the best method is to cut off the shoots, with about half an inch of heel under the leaves. Insert each separately in thumb-pots, well drained in pure sharp silver-sand. No stagnant water can rest in this medium. Place the pots in a light house or pit in a temperature of 55° to 60°, top and bottom, and see that no water is allowed to lodge in the crowns of the cuttings, and that the part in the pots is kept dry rather than wet. The base of the cutting must also be inserted firmly. In a month or five weeks they will be rooted and should at once be potted on, and grown throughout the season in a cool pit or greenhouse fully exposed to light and air, but not set in the eye of the sun nor the way of a draught. April or May, or as soon as may be after the plants cease blooming, is the best season for these modes of increase. Another simple mode of obtaining large plants is to reserve the latest and weakest of the plants struck one year; prevent them flowering, next season grow them on freely, and huge masses may thus be prepared for furnishing a 12-inch pot. But in such sizes rough lumps of peat and loam, and at least 2 inches of drainage must be used, to prevent the possibility of stagnation, with its consequent swift destruction. For the general stock a compost of equal parts loam, peat, and at least a sixth part of silver-sand, suits well. A small proportion of thoroughly rotted cow-dung is useful in giving colour and size alike to leaves and flowers. But it is safer to water occasionally with weak manure-water, as the unctuous nature of dung is apt to injure the free and open texture of the soil. As to varieties: For many years there were but two, the double white and the double purple, or rather lilac, for the purple was somewhat pale. A few years ago Messrs. Smith, of Dulwich, I think, introduced an improved set of double Primroses; and since then Messrs. Henderson and Son, and others, have raised or sent out many more, so that now we have quite a choice selection of double Primroses. Among these *Candidissima fimbriata plena*, King of Purples, *Magenta plena*, *Gem*, *Magnifica*, *Lilac Queen*, and *Magenta Queen*, are perhaps as good as most of them. For bouquet and vase-work, the old double white, which is easier grown than some of the newer varieties, is exceedingly useful. The semi-double varieties that are offered as coming true for seed are uncertain, and hardly worth the trouble. Better grow the best strain of single Primulas, and purchase plants of the finest double varieties, and propagate and grow them as above directed.—*Country*. [The following excellent selection of kinds is that of Messrs. E. G. Henderson, of St. John's Wood, who have a capital collection of these plants:—Double-flowered *Atro-rosea*, *Candidissima*, King of Purples, *Exquisite*, *Emperor*, Mrs. Eyre Crabb, *Magnifica*, *Rubra grandiflora*, *Blushing Beauty*, and *Princess of Wales*.—Ed.]

Large Cockscomb.—I have a Cockscomb which our local cultivators say is the best they have seen. Would some of your readers therefore kindly say if it is of more than ordinary size? It measures from tip to tip 2½ inches, and in depth over the crown 1½ inches. It is exactly as wide that is remarkable. It was grown, I think, from *Atro-rosea*, and it looks as if it would increase several inches yet.—JAMES SIMPSON, *Port Naresay, Broughty Ferry*.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATIONS.

Plants through the Table.

HAVING already described (see p. 101) the manner in which plants are put through the table, I shall now treat only of the floral arrangements round their bases, taking it for granted that the zinc trays are fixed in their proper places. Let us take the case of a dinner-table laid for sixteen persons. If the centre piece is a March vase, with a trumpet rising out of the upper tazza, it should be arranged thus:—In the bottom dish scarlet Cactus blooms and trusses of *Stephanotis* should be placed alternately with spikes of *Astilbe* (*Spiræa*) *japonica* and *Cyperus alternifolius*; around the edge, resting on the table-cloth, should be fronds of *Adiantum Farleyense* and *Pteris serrulata* alternately. In the top dish should be pale-flowered zonal *Pelargoniums*, Lily of the Valley, and Maiden-hair Fern; in the trumpet, *Astilbe* (*Spiræa*) *japonica*, *Rhodanthe Manglesii*, small-flowered scarlet and pale pink *Begonias*, Maiden-hair Fern, long-trailing sprays of *Lygodium*, and a few spikes of wild Grasses. The plants put through the tables should be Ferns (*Pteris tremula*), round the base of which should be arranged trusses of *Stephanotis*, white *Rhodanthe*, Maiden-hair Fern, and *Lastrea Felix-mas*. The baskets should be of glass, and might contain Grapes, two of white, and two of black, which should be set off with Ferns, a spray of *Lygodium* being also twined around the handle of each basket. There should be four oval glass dishes on the table, for Cherries and Strawberries. A Pine and Melon might be placed at top and bottom, which, like all the other dishes of fruit, ought to be decorated with foliage; between the baskets should be small circular stands or dishes for sugar. In front of each person might be a finger-glass, containing a button-hole bouquet, or coat-flower, of a colour to harmonise with those in the centre-piece, and on the surface of the water should lie double scarlet *Pelargonium* pips, and small leaves of the sweet-scented *Geranium*, called *Lady Plymouth*, the stem of each *Pelargonium* pip being inserted through the centre of the *Geranium*-leaf, so as to keep it firmly in its place. This table is suitable either for daylight or gaslight.

Groups of March-stands.

The lighter March-stands can be fitted, the greater is the effect produced, and for this purpose nothing is better than some of our wild field Grasses and Horse-tails; the foliage of *Asparagus* may also be usefully employed in decorations of this kind. I once awarded a first prize to a group of three stands ornamented after this fashion. Their forms were alike, with the exception of the centre-piece, which was the tallest, and which should always be the case where three stands are thus arranged. But few flowers were used in their decoration; and yet they were very beautiful, and much admired by all who saw them. The bases of the stands were concealed by a fringe of large Fern-fronds, on which were laid flowers of the showy *Eucharis amazonica* and the brilliant *Scarborough Lily* alternately. From among these the beautiful blue buds and expanded flowers of *Agapanthus umbellatus* peeped here and there; and the effect of the lower parts was still further enhanced by the judicious use of *Lagurus ovatus*, and other graceful ornamental Grasses. The tier above was fringed with Maiden-hair Fern (*Adiantum cuneatum*), beneath which drooped gracefully the beautifully formed blooms of both the rose and white-flowered *Lapagerias*. The other flowers in this tazza were *Eucharis* and *Vallota*, with the addition of *Franciscea calycina*, *Rondeletia speciosa*, and blue African Lily. The trumpet-shaped vases above were lightly filled with spikes of *Chelone barbata*, or scarlet *Pentstemon*, and light Grasses—the whole forming a most charming arrangement, and as good an example of a florally-dressed group of March vases as it would be possible to give as an illustration.

Decorations for Buffets.

The decoration of the buffet or sideboard forms an important point in the floral arrangements of the dining-room, and one not to be overlooked, though such is too often the case. Across the back of the sideboard nothing looks better than a handsome arch, formed of flowers and foliage; cut sprays can either be employed for this purpose, the ends being inserted in wet

sand at each end of the sideboard, or growing plants, one at each end, may be substituted, the pots being either concealed by ornamental cases or Fern fronds. Common Ivy forms a good foundation, as do also sprays of *Cobæa*, through which flowering creepers may be twined. The latter must be selected according to the season of the year, but the former, I need hardly remark, are always obtainable. A large stand of cut flowers looks well placed in the centre, and if a silver epergne, so much the better; for, though I dislike silver stands for flowers on the dinner-table, they are by far the handsomest for the buffet, where too much silver can hardly be grouped, provided that flowers and foliage are associated with it in such a manner that one sets off the other to advantage. Flowers for stands on the sideboard should be large, and arranged with as bold an effect as possible. A rough block of ice, with Ferns and flowers round the base, a few stems of bloom inserted in the ice (little holes having been drilled for that purpose), and a few light sprays of *Lygodium scandens* lying over the whole, have a charming effect; but where this style of decoration is used, there must be some vessel employed, into which the water from the ice can drip. Well-grown Palms, Ferns, and flowering plants also look well, but neat small plants are the most effective, as, if large-sized, they tend to give the arrangement a heavy appearance.

A. HASSARD.

AQUATICS IN BOTTLES.

THE more we see and know of plants for room and window gardening the more apparent does it appear that we have yet much to learn. Ferns, succulent plants, dwarf half-hardy Palms, and even some of the cooler-growing tropical Orchids,



Pontederia crassipes in a Bottle.

have been repeatedly recommended for indoor culture in window-cases and rooms, and I now wish to point out the adaptability of aquatics for that purpose, many of which will grow in a bell-glass in open windows, while some of those commonly grown in plant-stoves will luxuriate in a Wardian case or under a close glass shade, and actually give less trouble to their owners than Geraniums and Fuchsias. Our illustration represents a plant of *Pontederia crassipes*, grown by Mr. Kennedy, in a common Hyacinth-glass filled with soft water. His establishment in Covent Garden is, indeed, full of curiosities in this way. This plant was one of several which had been grown in an open shady window along with plants of the common bright green water Lettuce (*Pistia stratiotes*), which also grow well similarly treated. One of the best of all aquatics, however, for window or sitting-room culture is the

smaller variety of *Aponogeton distachyon*, which grows vigorously planted in sandy loam placed at the bottom of an inverted bell-glass. Another favourite plant for indoor aquaria is *Vallisneria spiralis*, the bright green semi-translucent grassy foliage of which is very ornamental. Apart from exotics, we have an abundant store of native plants, which may be grown either in Hyacinth-glasses or in inverted bell-glasses; and many of our common water-weeds, such as *Chara*, *Potamogeton*, *Anacharis*, *Callitriche*, *Lemna*, or *Hydrocharis*, readily submit to this system of culture. In addition to plants, a few water-beetles or small gold-fish might be added, to give life and interest to such aquaria. The only attention which water-plants require is a fresh supply of rain or river-water every week, taking care, at the same time, to remove all dead or decaying matter, so as to keep the whole fresh and pure. All through the summer and autumn months many sub-aquatic plants, such as *Cyperus alternifolius* and its variegated variety, *Narcissus*, *Nerines*, and other bulbs, may be grown in Hyacinth-glasses with as little trouble as that which attends the culture of the most ordinary window-plants; or, if they are filled with wet Sphagnum, sprigs of Spear-mint or sprays of Wood Ivy will root and grow as freely as if they were in their natural haunts.

B.

GARDENING AT SALT LAKE.

ON making a late trip to the Rocky Mountains, I certainly did think it very curious that at none of the mines or mining camps, nor at any of the houses of the owners or managers, or at the mines or farms that I visited, did I ever see any attempt made to form a flower garden—very rarely even an attempt at raising a few vegetables. At all the stations or settlements, or houses in mining camps that I saw, the houses were placed on the bare ground, without enclosure or attempt at neatness or consideration for amenity. Sometimes, indeed, you would see a sort of enclosure at the back, but this is for the cattle or waggons, and is devoted to their use, and almost invariably is put up in the most temporary and makeshift fashion. The only places where I saw gardens in Utah were in Salt Lake City. It was otherwise in California, where the usual evidences of longer civilisation showed themselves in most towns, even mining towns of any standing. But with the exception of Salt Lake City, all the towns in Utah are of comparatively recent date. In the accounts of that city we usually read of the beauty with which it bursts upon the eye, with fruit trees rising among the houses, and reminding one of an eastern city. I can only account for this style of (according to my view) exaggerated admiration, by supposing the writers to have been sojourning for some time, either on the treeless prairies of the east, or among the alkaline deserts in the west, and so to have had their minds disposed to see exceptional beauty in anything approaching to trees or foliage. To one not so prepared, it needs a strong imagination to be able to see in the small orchards of less than five-and-twenty years growth, the richness and beauty claimed for the city; for with the exception of a single cluster of larger Cotton-wood trees (*Populus monilifera*), around one of the older houses, and which probably were there before the arrival of the Mormons, all the trees, whether Cotton-wood or fruit trees, are young, and have been planted since the foundation of the city in 1848. When in the city itself, young as they are, the trees look tall, but when seen from a little distance, as from the hills at its back, they dwindle to their proper value. They do not overtop the buildings, and, in general, scarcely reach the house-tops. Looking down on the city from these hills, we see far to the south the wide valley stretching before us. Its aspect is desolation itself. The few cultivated farms beyond the city are all within three or four miles of it, and then nothing but an unbroken expanse of Sage meets the eye. It has nothing of the greenness of Grass, but a uniform brownish-olive colour, spread out without interruption, until it melts in the haze of some distant low hills. The lofty ranges on each side redeem the landscape from sameness, but cannot save it from dreariness or desolation. On this side no water is seen, for the Jordan, which flows down the middle of the valley, creeps along out of sight between muddy or sandy deposits, through which it has cut its way; and when

the eye looks for relief to the nearer city beneath, it turns away disappointed, for the buildings are generally placed wide apart, and being wholly built of wood, both walls and roofs have all a grey uniform tint, giving them, at some distance, the aspect of rectangular grey boulders dotted over the plain. The absence of chimneys strikes the European eye; they are not needed, for the heating and cooking is all done by stoves, whose chimney is a slender iron pipe sticking up out of the side or in the rear of the house. I had no previous idea how much the picturesque beauty of our landscape at home owes to our square massive chimneys and to our roofs being slate, thatch, tile, or something different in colour from the walls below them. On a closer inspection of the trees I found that the young Cottonwood trees which line some of the streets, are suffering badly from the attacks of a goat or leopard moth, which bores in and eats away the wood, exactly as our goat moth does. While I was there a tree close to the hotel in which I boarded was broken right across the middle, at a place greatly eaten away by these insects. I got some old cocoons, but saw no specimens of either the larva or the perfect moth, so cannot give it a name. Some of the trunks, much bored by them, which they had deserted, I found taken possession of and utilised by swarms of a small black bee. The fruit trees seem perfectly healthy; they were principally Peach trees and Apple trees, and their lavish flowers beautified the place immensely in spring. I did not happen to notice any of them attacked by insects, their position in private enclosures not being favourable to entomological examination; but I have no doubt they must suffer considerably from the attacks of an insect very similar to our lackey moth, for in the hills, a mile or so off, I found a wild *Prunus* which occurred in considerable abundance in the hollows on the hill sides (and which is probably the Chokeberry of the settlers, or *Prunus virginiana* of botanists), terribly infested by the caterpillar of such a moth. I found the necklaces of eggs surrounding the twigs exactly as with our own, only slightly smaller, and almost every bush disfigured by such a caterpillars' nest as the larva of the lackey moth spins, consisting of a thick white web, tying together a few twigs in and around which scores of caterpillars, very similar to those of the lackey moth, were busy at work, creeping out and creeping in. I brought home with me to my room, two or three of these nests, first carefully removing all the caterpillars that I could find, and for a week after I had to endure a succession of them, making their appearance and crawling over the walls and furniture, and not even holding my own person or that of my friends sacred, one of whom I had the mortification to see a good deal discomposed by the appearance of first one and then another upon his clothes during a short visit that he paid to me, but I did not feel called on to enlighten him as to the source whence they came. The Apples are said to be good—whether better than our own or not, I had no opportunity of judging, not even such a one as Hepworth Dixon tells of—“When I was leaving Salt Lake City,” says he, “Sister Alice, the daughter of Brigham Young, put up some very fine Apples in a box for me to eat by the way. At a station on the plains, I found that a lady, a fellow-passenger in the waggon, had been opening my box and helping herself to the fruit; and when she saw me looking at her, with some surprise perhaps visible on my face, she merely said, ‘I am trying whether your Apples are better than mine.’”

The Peaches I can vouch for being the worst that ever I met with; small (not much larger than a Walnut), yellow, fuzzy, juiceless, flavourless, bits of sponge. Until I tasted these, I never knew the meaning of the American boast, that on the settlers' farms the Peaches were so plentiful that they were given to the pigs. I am sure that in Utah they could not be put to a fitter use, provided only you can persuade the pigs to eat them.

Burton, in his “City of the Saints,” records—that when he visited Utah in 1867, a Vineyard was then being planted on the hill-side near Mr. Young's block, and expresses his belief that “home-made wine will soon become an item of produce in Utah.” I heard and saw nothing of this, although I know well a Sage-clothed brae behind Brigham Young's block that is well adapted for the experiment. I imagine it must have failed, because I was asked by Mr. Jennings, one of the most prosperous merchants in Utah, to advise him as to the health

of some Vines he had growing in a greenhouse in his garden. I found the Vines to be slender puny canes, with the leaves small and yellowish. Mr. Jennings was inclined to refer their unsatisfactory condition to potash and other alkalis in the soil. But one would think that the alkali had surely been sufficiently washed out of the soil in and around the city by this time to allow everything that suits the climate to grow freely. It is said the worst alkali lands will get rid of their superfluous alkali by five years' lixiviation, and here the ground has been subjected to five-and-twenty years' irrigation. I therefore, incline to think that we must look elsewhere for the cause of the failure of the Vines, and I am more disposed to charge it to the cold of the winter. Mr. Jennings's greenhouse was a common small span-roof structure of glass and wood, standing on the bare ground, without foundation or flues, and the roots of the Vines of course as much out as in the house. A few days previously the ground had been covered with snow, and, the cold during winter, without being very intense or uninterrupted, is nevertheless pretty sharp; and it may help the reader to judge of the severity of the winter, if I mention that Mr. Jennings had tried the Irish Yew, the Bay, the Portugal Laurel, the Holly, and various other common evergreens, but they had all died during the winter; and, although he intended to try Elms, Planes, and other old country trees, he greatly feared they would not live. Nor had he been more successful in introducing Pines from the neighbouring mountains, which he had tried to do by transplanting them; but, I would not despair of these, for I found some Douglas Fir and *Picea grandis* growing in the bottom of one of the neighbouring canons only 200 or 300 feet above the level of the plain, and, at any rate, it could not be the cold that hurt them—it might be want of care in transplanting. But having no pretensions to practical knowledge of Vine-growing, I should be glad if any of the able Vine-growers, who from time to time impart their knowledge to us through the pages of your journal, would say (so far as the information given allows) to what they would ascribe Mr. Jennings's want of success. I should add that he had a Scotch gardener, that is to say, a Scotch labourer, who, at some former period of his life, had picked up some knowledge of gardening, and who kept the rest of the garden, especially the vegetable part, in very fair order. Gooseberry bushes seemed to thrive well enough; which, perhaps, is not surprising, seeing that they grow wild in the Sierra Nevada, where Douglas found them. I found one in the Sierra Nevada in fruit in July; the berry small but very hairy, and the hairs very long and very stiff, almost as long, indeed, as the diameter of the berry.

I did not notice our Black, Red, and White Currants, although I have little doubt they were there; but the yellow-flowering Currant seemed a great favourite. Mr. Jennings's garden was surrounded by an excellent hedge of the Osage Orange, which was almost the only fence that could be called a hedge in all the City. The common Hawthorn will not grow there, the winter being too severe for it. I found the same thing even in Upper Canada. As to flowers, I saw nothing that is not common in England. In front of one or two of the best houses you might, in spring, see a few Hyacinths or Parrot Tulips planted out, and the usual common flowers, such as the purple Iris, Roses, &c. In Mr. Jennings's greenhouse were the usual Tom Thumb Geraniums, scarlet-flowered Pelargoniums, the variegated Coleus, and such like; but I do not think that anything interested me or affected me more than to see in a little patch, not 12 feet square, in front of a small house, a few plants of the variegated Balm that you commonly see in the cottage gardens in Scotland. I could have wagered that the residents were, or had been, “cotters” from the old country, as I could that those in the next plot were not, who had, in the hot days of July, removed their double cooking-stove out of the house into their little plot, where I saw it standing busily at work in the open air.

I cannot pretend to nominate all that I saw or missed; it would serve no good purpose, and the cursory notes that I have given should be enough to enlighten anyone, that is interested in the subject, as to the true character of the climate and the great, but as yet undeveloped, horticultural capacities of Utah.

ANDREW MURRAY.

THE FLOWER GARDEN.

STRELITZIA NICOLAI.

THIS plant is one of the most graceful members of the Musal alliance, and deserves to become popular in our gardens and conservatories as a striking and elegant decorative foliage plant. It is sufficiently hardy to withstand our climate during the summer months, and grows even more freely than most of the Musas when planted in a richly manured soil and in warm sheltered positions. In habit the plant is more robust than any of its congeners, if we except *S. angusta*, which frequently attains a height of from 30 to 40 feet, treated as a warm conservatory plant. Both the last-named plants are chiefly remarkable for their fine foliage, but some of the smaller-growing kinds, as *S. ovata* and the even more beautiful *S. reginæ*, are well-known flowering plants, generally grown in a warm conservatory or in a humid plant stove. These species will, however, both grow and flower well in warm sheltered positions out-of-doors, and form striking objects massed along with Musas, Palms, and the larger Arads. Our illustration gives an excellent idea of the noble port assumed by well-grown specimens of *Strelitzia Nicolai*, which, although common as a half-hardy foliage plant in many Continental gardens, is very rarely to be met with in this country. B.

NEW DOUBLE-FLOWERED ZONAL PELARGONIUMS.

SOME months since, those of your readers who were interested in the above class of decorative plants were much indebted to M. Jean Sisley for some very interesting information regarding the origin of these popular and really beautiful plants, and certainly no one could be found better qualified for the task he set himself, than M. Sisley, who has probably done more than any other cultivator towards the improvement of this useful family of plants, and was the first, and, I believe, as yet, the only raiser who has succeeded in producing a double white variety. The improvement which has been effected in this section of the Zonal Pelargonium during the last fifteen years, or since *Triomphe de Gergovia* was discovered in the Botanical Gardens of Clermont-Ferrand, Puy de Dôme, in France, is something very remarkable; and this would, no doubt, be readily admitted were it possible to compare some of the more recent introductions with the above-named variety. On seeing the first blooms of some of the very fine sorts which were introduced last year, the production of English as well as of Continental raisers, I felt inclined to think that the double-flowering Pelargoniums, like their tricolored-leaved congeners, had nearly, if not altogether arrived at their *ultima thule*, and that the march of improvement could proceed little, if any, further. But on flowering three of M. Sisley's latest productions, which M. Aléatière, of Lyon, is now distributing, I felt pleased to find what I,

at least, considered a very decided advance on all previous introductions; indeed, I think the variety named *François Pertusati* must certainly be considered amongst the most unique and beautiful of all the double sorts which have, as yet, been introduced. The habit of the plant appears to be very good; the foliage is slightly zoned, and it has the appearance of being a very free-blooming variety; but, as my plant is, as yet, small, I cannot, of course, speak with certainty as to this quality. The florets or individual blooms are large and loosely double, and appear to lose their entire individuality in the formation of a finely-shaped globular truss of immense size and of a richly-shaded salmon colour; the petals being long, become lighter in colour or nearly white towards the margins, which imparts to the well-formed truss a singularly

beautiful appearance. George Sand is also a very remarkable and distinct variety of dwarf and compact habit of growth, the foliage being of a light green shade of colour and slightly zoned. The individual flowers are exceedingly large, with long and somewhat irregular petals; forming, however, a finely-formed truss of large size. Under glass the flowers are almost pure white, but they assume in the open air, or even in a situation much exposed to the sun, a delicate rose-coloured tint, which renders the truss exceedingly beautiful. Carl Vogt is of a somewhat stronger habit of growth, with a well-defined zone upon dark green foliage. This is also a very striking and fine variety, the shade of colour being new and peculiar. P. GRIEVE.

Culford, Bury St. Edmunds.



A noble *Strelitzia*.

THE FLOWER-WALK IN REGENT'S PARK.

THE ornamental part of the Regent's Park, so tastefully laid out a few years ago by the late Mr. M. Nesfield, consists of two parts—one, an Italian flower garden, placed on each side of the fine Horse Chestnut avenue; and the other, an open undulating space, laid out after the manner of an English pleasure ground, with serpentine walks and different-shaped clumps, containing selections of the finer kinds of flowering shrubs and evergreens. Of these, some of the more striking are also planted singly on the Grass, along with the original trees, which having now attained considerable size, form fine objects, and provide ample shade in summer. In the Italian garden are some handsome vases, judiciously placed, and which, when filled with Geraniums and other suitable plants, form striking objects. There are also a number of fine Yuccas, variegated Hollies, and other evergreen shrubs, planted singly on the Grass borders which surround the sunken beds in the central compartments. The flower-beds are edged with Box, the small walks gravelled, and the whole surrounded by an edging of Austin's stone, inside of which is a border of Ivy. Lombardy Poplars, supporting Grape Vines, which twine around their stems, are planted at regular distances on each side of the straight main walks. These, when regularly pruned, form a good substitute for the upright Cypress, which does not thrive about London. Some of the circular beds in this part, are filled with sub-tropical plants, and are now very effective. What is called the Colosseum ground was originally quite flat, and, owing to the crowded state of the trees, in many places destitute of

Grass. The undulations consist chiefly of material supplied by the Underground Railway, surfaced with the original soil. This garden is at present in full beauty. In the beds are Castor-oil plants, *Dracenas*, *Aralias*, *Arundos*, *India Rubber* plants, and the old-fashioned *Hollyhock*, whose fine form is desirable for the sake of variety. Nothing very delicate or tender is introduced. It was Mr. Nesfield's intention to have had, if possible, a fine entrance to the park from Portland Place, in a direct line with the broad walk; another wing added on the west side, similar to that on the east; and, on going northwards, three rows of Elms swept away to make room for a row of Limes, scarlet and white Chestnuts, and a few of the larger *Coniferae* planted on what might become a lawn, provided the idea was carried out.—I.

SEDUM SPECTABILE.

SEDUM SPECTABILE—*Fabaria* of some, and *rosenum* of others—is a most useful plant for flower-garden decoration. It flowers late in the season, when most of the summer-blooming plants are losing their lustre. Previous to its coming into flower, the glaucous foliage of this *Sedum* tends to give a pleasant relief to any high coloured plant which may be in conjunction with it. Its fine heads of rosy-purple flowers expand about the beginning of August, and it remains for two months, and sometimes longer, in stately perfection. Planted in lines in ribbon-borders, it is particularly effective when placed in centres of beds, or in patches by itself it also looks well. Like others of its class, it withstands extreme cold, heat, or wet, with impunity. I saw it in quantity a few days ago, with Mr. Knight, at Floors Castle, Kelso, where it has been extensively used for years with telling effect. I remember seeing it in magnificent order at Hampton Court, some years ago, when the gardens there were under the control of Mr. Donald, at which place it was principally planted under and around the large spreading dense Yew trees in the flower garden. In this situation, as in the unshaded beds, the fine heads of flower, some of them a foot across, were fully developed, high in colour, and perfect in every way. Not a great many plants will grow, and fewer still will flower, in such shaded places, and this *Sedum*, doing both to perfection, should secure general cultivation in like situations. It is often grown on rock-work or elevated mounds, but, as it grows from 1 to 2 feet high, it is best suited for the lower flats and cavities, where the whole plant can be seen to advantage. A rich soil suits this *Stonecrop* best, but it thrives in nearly any compost. The stock may be easily increased by dividing the old crowns. Unless where a change is desired, it is not necessary to remove it annually. Cultivated in pots for late summer or autumn decoration of the greenhouse, or wherever hardy plants in pots may be needed, this variety has no equal amongst *Sedums* or succulents generally. In an 8-inch pot it produces from six to twelve spikes, and these, when furnished with their large heads, form a collective mass of bloom 3 and 4 feet in circumference.

J. MUIR.

Cloudfords.

Sweet Peas and their Culture.—The Sweet Pea has improved in common with many other popular flowers, and there is reason to believe it is capable of a greater improvement than it has yet received. The recent introduction of two large-flowering varieties, the *Scarlet Invincible* and the *Black Invincible*, both very fine, show that valuable selections are being made. One of the best known varieties is the *Painted Lady*; this has a pale rose standard, as the upper petal is termed, the wings (or side petals) and the keel being white. This is a very charming form, and it is a great favourite in our gardens. There is an improvement on this known as the *New Painted Lady*, in which the standard is of a deeper rose, and contrasts most effectively with the white wings. The *Black Sweet Pea* has a very dark purple standard, and deep rosy-red wings and keel. Then the *Purple* comes in the same way, but with a paler standard; the *Purple Striped* has the wings and keel striped with white. One of the handsomest is the *Scarlet Invincible*, a fine large variety, with the standard of a bright scarlet hue, and the wings of a clear rose. The *Scarlet Sweet Pea* is a smaller form of this, and the *Scarlet Striped* is the same, but prettily striped with white. The *Blue-edged Sweet Pea* is a form of the purple, with a margin of blue to the wings; but its character is scarce fixed enough to be regarded as a permanent variety. The *White Sweet Pea* is wholly of this colour, and is very charming indeed where mixed with varieties of deeper tints. There are many ways in which the Sweet Pea can be turned to account in the adornment of a garden. A common method is to sow little patches in borders, the seed being generally that of mixed varieties, and then, by placing some stakes against them, secure pillars of flower. When it can be done, a hedge

of Sweet Peas is an attractive sight, and sometimes it can be turned to account to hide an unsightly place during the summer. Many gardeners grow a hedge in this way in order to yield a supply of cut flowers, which it always does in plenty. I once saw a charming combination at Muckross, Killarney, the seat of the Hon. Capt. Herbert, M.P. Across a portion of the kitchen-garden were several hedges, made of the bright-coloured *Scarlet Invincible Sweet Pea*, and *Tropæolum canariense*, mingled together. In the soft moist climate of Killarney there was a profuse growth and an abundant bloom, the flowers of both being very fine. It is useless to grow the Sweet Pea unless planted in good soil. Many gardeners sow in pots in the autumn or early spring, and place them under glass, so as to bring the plants in flower early in summer.—R. D.

Flowers on Lawns.—We could do much better with a portion of our lawns than continually shaving them. Numbers of pretty Alpine and bulbous plants thrive freely and flower abundantly in short Grass, even if occasionally mown. There is a little lawn at Worthing now dotted with the flowers of the *Harebell*. It seems to have been mown several times during the season; but the *Harebells* have come up again, the delicate blue bells being on stems 3 inches high instead of the usual height of the plant. Such a very attractive system is not in keeping on the more frequented parts of the lawn; but there is in many gardens a good deal of mown surface which would look much better if adorned with such jewellery of plant life.—R. W.

The New Rockery at Kew.—This, notwithstanding what has been said against it, is now looking better than any rockery I have seen this season, and, though I am afraid a good many of the plants on it will hardly stand a severe winter without protection, it has been a great success at present. Among the rarest and most interesting plants I noticed on it, most of which are now in flower, were:—*Spraguea umbellata*, *Saxifraga Stracheyi*, *Polygonum Brunonis*, *P. capitatum*, *Dianthus libanicens*, *D. saxicola*, *Mazus bellidifolius*, *Habenstreitia dentata*, *Astragalus sericeo-albus*, *Micromeria piperella*, *Lobelia littoralis*, *Stobæa purpurea*, *Corethogyne spathulata*, *Anchusa capensis*, *Stachys corsica*, *Eustachys distichifolia*, and the finest plant of *Omphalodes Lucilæ* I have ever seen. Several of the half-hardy *Begonias*, as *Sedeni*, *intermedia*, &c., were flowering freely at the same time. In the herbaceous ground I particularly noticed a very fine *Datura* (*D. meteloides*) in flower; also, *Aquilegia chrysantha*, a splendid plant; *Nigella Fontanesiana*, and *Didiscus cæruleus*.—H. J. ELWES.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilies in 1874.—I think the past dry season has been peculiarly well suited for *Liliums*. *L. excelsum* has bloomed strongly here, the stems being more than 6 feet high. I think I never before saw that glorious old plant, *Lilium caudatum*, so fine as it has been this season. Lilies are the easiest to grow and among the noblest of flowers. We shall, I believe, soon see them again in every garden.—J. W.

Gaura Lindheimeri.—This graceful plant is now blooming beautifully here. It has attained the height of 4 feet, and when its slender branches are moved by a gentle breeze, the beautiful white blossoms, seen at a distance, appear like so many butterflies dancing in the air. It is not quite hardy in this cold damp locality. It is best raised from cuttings in autumn, which may be kept in a cold frame through the winter and planted out in May; rich loamy soil suits it well.—J. WHITTAKER, *Mosley, Derby*.

Wintering the Spring Navel-wort (*Umbilicus spinosus*).—The striking resemblance this plant has to the hardy *Sempervivum* is likely to lead anyone, who may have procured it through the summer, to suppose it is hardy, and treat it accordingly. It should, however, have the same protection and treatment during the winter as *Echeverias*. We lost a very fine bit of it through its being inadvertently left out in the cold last winter, and I write this that others may not go and do likewise.—J. MUIR.

Hardy Plants for a Dry Soil.—I shall be greatly obliged by your informing me of some hardy plants suited for a very dry and rather poor soil.—SEP. The following plants will be found to succeed:—*Artemisia* in variety, *Statice* in variety, *Vinca* major and minor in variety, *Erythrum Tachirachewii*, *Anthemis nobilis plena*, *Alyssum saxatile*, *Arabis albidia*, *Antirrhinum majus*, *Wallflowers*, *Centranthus ruber*, *Cerastium* in variety, *Pinks* and *Carnations*, *Campanula* various, *Lysimachia nummularia*, *Rudbeckia hirta*, *Solidagos*, *Asters*, *Gypsophila paniculata*, *Saxifraga* in great variety, *Sedums*, *Sempervivum*, *Thymus* in variety, and *Corydalis lutea*. Pea-flowered plants generally thrive well in dry soils, so do many of the *Compositae*.—ED.]

Wilderness Roses.—For this idea, says Mr. Rivers in his "Amateur's Guide," I am indebted to Professor Owen, who, wishing to ornament a wild part of his ground full of Thorns, Grass, and weeds, adopted the following plan, which, I am inclined to think, is quite worthy of record. Large sewer-tubes, rejected on account of flaws in the enamel lining, were sunk vertically in the pure gravelly soil to within an inch or so of the surface, and filled in with loam and manure, and a Rose planted in the centre of each. The soil in the tube was kept free from weeds, and the running Grass and other weeds outside were prevented making their way into such good quarters. To give the Roses extra vigour, some manure-water was given to them occasionally in the summer. The effect of Roses growing in the highest state of luxuriance in a wilderness was most charming.—The inside diameter of these tubes is 16 inches, their length 30 inches, so that they go below the roots of weeds, which would otherwise soon devour the rich compost in which the Roses delight.

THE SHAKESPEAREAN GARDEN.

MANY of the allusions made by Shakespeare to plants and their products, involve or seem to acknowledge the superstitions and credulities of former ages, especially as recorded in books. He tells us that Fern-seed has the power of rendering a person invisible; that the use of Rosemary quickens the memory; that the sudden perishing of the Bay-tree is ominous of evil; that the use of Fennel improves the sight, and that when "torn out of the earth" the root of the Mandrake "shrieks," with results so terrible to the bystanders—

That living mortals, hearing it, go mad.

Shakespeare, of course, never believed these things; he knew the difference, as well as any man, and better by far than thousands of men, between fact and fiction; he simply accepted the superstitions and the folk-lore that were current in his day, for what they might be worth, and left it to his readers to separate the veritable from the fabulous. So doing, he paid them the most graceful compliment that an author can render, which is to assume that his reader is sufficiently intelligent to distinguish at all times between the mythic and the genuine, and so well read in the literature of all past ages that he will recognise every allusion, and never need to be told which is legend and which is history. A man of liberal education and well cultivated taste is at once differentiated from the vulgar and the uninformed by the ease with which he separates the poetical ornament from the prosaic warp and woof. Shakespeare, more perhaps than any other man who ever lived, quickens our powers and aptitudes for so doing; not by precept, but by that sweet magic of secret influence which always sinks so much deeper than didactics: hence he becomes our tutor, though we may not think it as we go along, in everything that makes intellect strong and beautiful. Where Shakespeare got all his information is a mystery. Of the extent and qualities of his education, conventionally so called, we have no exact and minute records. It may reasonably be doubted if he was ever diligent at lessons. It is pleasanter, in truth, to think of him as a man who, from his youth upwards, stood away and apart from mere book knowledge, since we then become more impressed with his originality. That which in Shakespeare was pre-eminently remarkable, and which stood with him in place of what in modern days is called "information," or "a good education" was *insight*, the superb faculty by means of which the mental vision instantaneously co-ordinates itself with the breadth and altitude of things, the least as well as the greatest, and which, at the same time probes, without effort, to the innermost centre. Shakespeare had the felicitous power, most especially, of seeing things, not only as to their outsides, as most people are fain to content themselves with doing, thereby falling every day of their lives, into the most ridiculous and unfortunate mistakes, but as to their inmost substance and kernel. Whatever he looked at, he saw *through* it. With a man who can do this, book-learning, despite its value to the mass of mankind, is intrinsically of slight importance. There is little need, therefore, to inquire who were his schoolmasters, or what was the range of his reading as a student by the "midnight oil." It would be interesting could we know authentically what books he was accustomed to resort to for his chief pastime in reading, when a lad; but I question if it would throw much, or any, light upon the source of the grandeur of his utterances. Shakespeare was the representative of Power, rather than of knowledge, taking the latter in its accustomed arbitrary and technical sense of a heap of facts which too often—

Like Saul's plate-armour on the shepherd boy,

serves less to arm than to encumber. He discerned the fundamental and essential beauty of things, as it exists independently, of what man may do, or fancy he may do, to render it trim and tidy, penetrating through the apparel imposed by art, to the glorious first principles that endure unchanged for ever. How accurate his perception of what constitutes a garden! How charming the sentiment that pictures the "Woodbine coverture"; the quick eye for

The Marigold, that goes to bed with the sun,
And with him rises weeping.

And how exact his ideas of the rule, the design and result of many a little detail of the gardener's art, that one would fancy belonged only to the professional. Take, for example, the reference to grafting:—

You see, sweet maid, we marry
A gentler scion to the wildest stock;
And make conceive a bark of baser kind
By bond of nobler race. This is an art
Which does mend Nature: change it rather: but
The art itself is Nature.

I doubt if many of our current horticulturists, except those who are readers of Shakespeare, recognise so perfectly in the work of their hands (the admirable practical work which helps to render our island so fair and fruitful), that when pure and noble art is wisely applied, instead of interfering with Nature, or superseding it, the act is really one of ministrations to Nature. The gardeners, more than any other men, are the trustees of living Nature; it is theirs, not only to protect it, to eat of it, and to supply the market-place with what it yields in the form of flowers and fruit, so that money shall flow to their pockets, all of which is extremely proper, and exemplary, and laudable; it is theirs, at the same time, so to cherish and foster it that the world shall wax more lovely through their work. Magnificent, no doubt, are the uses to the world subserved by manufacturing, by commerce, and by literature; but the beauty of the earth, as regards its cultured vegetation, is to civilised mankind every bit as important. Beauty is quite as large a fact as utility; it is the happy function of the gardeners to sustain it; no man should presume to call himself a gardener who does not feel in his inmost heart a deep and reverent love of beauty, and that he is an enthusiast for life in its behalf.

That Shakespeare's acquaintance with individual species of trees and plants, in the strict botanical sense, was scanty and casual, is likely enough. He had no occasion to possess the minute knowledge that we expect in the curator of a botanic garden. Sufficient for us is it that his piercing eye saw in many a little flower what had never been detected by anyone else. I do not dispute the desirableness of knowing that the *Campanula rotundifolia* is distinguished by having the "lobes of the corolla considerably shorter than the tube," as taught in the florists; but it seems to me quite as pleasant to be able to see without instruction, as Shakespeare did, that this darling of the ripened summer, the little Harebell, is "azure," and not simply blue, as a hundred other flowers are. Of the two features in question, for my own part I think I would rather see, as the better, the one that Shakespeare saw; and similarly, at another season, that although the Daffodil is differentiated by its "elongated crown," it comes, not merely in spring, but "before the swallow dares." Bare facts, such as Shakespeare never rested in, are but like "the letter which killeth," *i.e.*, serves the intellect without ever touching the heart; contrariwise, the "spirit which giveth life," is found, as regards temporal things, in the faculty, which, like the stream in the "Two Gentlemen of Verona," not only "makes sweet music with the enamelled stones," but giveth

A gentle kiss to every Sedge,
He overtaketh in his pilgrimage.

A proper question at this point, as a first step in the study of the Shakespearean garden, is what books the great dramatist may probably or possibly have been indebted to—directly or indirectly—for the quaint credulities and superstitions above indicated.

Books on Plants in Shakespeare's day.

Fanciful properties existing in plants formed a considerable portion of the herb-craft of the time; and, though amusing enough in our own enlightened age, from their very absurdity appear to have been implicitly believed in by the mass of the people. Let us not forget that out of many of them have arisen the facts of the pharmacy of to-day. Falsehood there is in the world, and in abundance, no doubt, but there is not so much falsehood as misconception and misunderstanding. We may gather plentifully, from his own utterances, that, though in a certain sense independent of books, he was by no means unacquainted with them. A man

insensible to the value of books could never have penned those noble words—

My library
Is dukedom large enough.

So far from it, they could only have come from one who understood to the very core that, next to Nature, good books are our truest and most precious companions. "When I come into my library," said Heinsius, "in the very lap of eternity, amidst so many divine souls, I take my seat with so lofty a spirit and such sweet content, that I pity all those great and rich, who know not this happiness." "These friends of mine," writes Petrarch, "regard the pleasures of the world as the supreme good; they are ignorant of my resources. I have friends whose society is delightful to me; persons of all countries and all ages, distinguished in war, in council, and in letters. Easy to live with, always at my command, they come at my call, and return when I desire them; they are never out of humour, and they answer all my questions with readiness. Some present before me, in review, the events of past ages; others reveal to me the secrets of Nature; these teach me how to live, and those how to die; these dispel my melancholy by their mirth, and amuse me by their sallies of wit; and some there are who prepare my soul to suffer everything, to desire nothing, and to become thoroughly acquainted with itself. As a reward of such services they require only a corner of my little house, where they may be safely sheltered from the depredations of their enemies." By the time of Shakespeare books were much more numerous than in the days of Petrarch, who died exactly 190 years before the former was born. Printing, moreover, was not invented for nearly a century after Petrarch breathed his last. Shakespeare stepped into a period when the truth of the immortal words just quoted was possible at least to every gentleman. When we ask what books he had, in other words, what was the composition of his library, of course it does not imply that Shakespeare held one of his very own, a private possession, bought or inherited, and contained within his house. His library is to be thought of in the same sense as the public or semi-private collections of books accessible to men of culture in this existing nineteenth century, and which are virtually the property of everyone who uses and appreciates them. Men should remember at all times, when reckoning up their wealth or estimating the value and the area of their possessions, that, by the munificence of God, we are all of us far richer in regard to what is usually omitted from the catalogue, than what we may have legal control over. The best property is that to which no individual holds, or ever can hold, the title-deeds. I count it equivalent to a thousand a-year, to possess, as my own, originally and inalienably, the sunshine, the fresh breeze upon the mountains, the sea, the trees, the wild flowers, and the sweet spectacle of the green fields. I count it equivalent to another fortune that I have the command of all the books in the British Museum. They would embarrass me, were they mine to sell and to keep in order; being mine to use, for solace and aliment, whenever I please, I am finally happy and content; yea, I feel myself as rich as the ancient Ptolemies of Alexandria.

Shakespeare, in this broad, and though external, thoroughly satisfying sense of ownership, had an enormous library. He was born, be it remembered, in 1564, and lived till 1616. All the great authors of ancient Greece and Rome were his—Sophocles the pathetic, Horace the polished, Lucretius the philosophical. The Phædon of Plato, the Poetics of Aristotle, Cicero upon "Friendship" and "Old Age," the picturesque histories of Xenophon, entertaining Lucian, lively and romantic Ovid, were all at command. Virgil had been printed as early as 1469, and for those who could not read Homer in the original, by 1603 came the translation of the Iliad, by glorious old Chapman. Of the ancient writers upon plants and the *Materia Medica*, Theophrastus had been printed in 1495, and four years later Dioscorides, both by the celebrated Aldus. Of the polite literature of the two or three centuries preceding his own era, there had come from Italy, besides Petrarch, the tales of Boccaccio, the poems of Dante, who died in 1321; of Ariosto, who died in 1533, and of Tasso, who lived into his own time, viz., till 1595. Cornaro, author of the

most amusing little volume ever compiled upon the "Art of Prolonging Life," died in 1566. From France had been contributed the fun of Rabelais (ob. 1533), and in 1580, appeared the far-reaching and sprightly essays of Montaigne. Brantome, the very man to attract a dramatist, was outlived by Shakespeare only two years; and it was upon the very same day that Shakespeare closed his eyes that the most illustrious of Spanish writers, Cervantes, author of "Don Quixote," also expired. England had reason already to be proud of her Chaucer; in Shakespeare's own time lived the author of the "Faërie Queene," Samuel Daniel also, who survived him three years, and the chivalrous and ill-fated Sir Walter Raleigh, author of that noble book, "The History of the World." To the English prose of this period belong likewise the writings of Lord Bacon, and of many another it is needless to specify. Enough has been mentioned to show that in the time of Shakespeare, the world already possessed some of the best books that give value to our own shelves. That Shakespeare had read them, or consulted them, or even a tithe of the number, of course, is not implied. Probably, he knew very little about any of them, except by hearsay; nor is it probable that he had read much even of the curious herbals which relate the superstitions respecting Fern seed, &c. The argument is simply that, in the old writings upon plants, we find the tales and fables, which, creeping into the folk-lore of his time, he introduces so felicitously when occasion invites. The earliest of these old herbals appears to have been the curious volume compiled about 1360, by Bartholomew Glanville, an English Minorite or Franciscan, of the family of the Earls of Suffolk, and who appears to have been the Pliny of his time. The book, which was called "*Bartholomæus de Proprietatibus Rerum*," deals not only with plants, but like Pliny's great *Cyclopædia*, with Nature in general. In 1398, an English version was made by a celebrated Cornishman, John Trevisa, included by Fuller in his "*Worthies of England*," and who, at the time of his work, resided at Berkley, in Gloucestershire. It was printed in London by Wynkyn de Worde, and a second edition was issued in 1535, or twenty-nine years before the birth of Shakespeare. Abroad it was several times reprinted, not only in the original Latin, but translated into French, Dutch, and Spanish. In some degree contemporary with it was the famous *Ortus*, or *Hortus*, *Sanitatis*, the German version of which appeared in 1488. The "*Historia Plantarum*" of Fuchsius, with its hundreds of facetiously accurate and beautifully engraved drawings, was published in 1542, and was followed by the writings of Gesner, obiit 1565; Matthioli, ob. 1577; Cæsalpinus, ob. 1603; Clusius, ob. 1609; Lobel, ob. 1616; the two Bauhins, Dodonæus, and several others well known to the archaeology of botany. The "*Historia Stirpium*" of the last-named was translated into English by Henry Lyte, who died 1607, the same year as the celebrated John Gerard, constructor of the well-known massive folio, and owner of the thrice-famous garden in Holborn. The date of the catalogue of this garden, 1596, is the one so often quoted as the year of the introduction into England of various exotics, no doubt brought over, some of them, long before, but of which this is the earliest mention. Wm. Turner, Dean of Wells, published his "*Herbal*" at twice, viz., in 1551 and 1562. Lord Bacon's "*Sylva Sylvarum*" should not be forgotten; a dozen other works, of more or less inferior note, might also be named. Pliny was translated into English by Philemon Holland, who was thirty-five when Shakespeare, at twenty-two, removed from Stratford-upon-Avon to the metropolis.

Such, accordingly, was the literature which Shakespeare had at command. Many things in his dramas are plainly illustrated in it; the best part of Shakespeare, nevertheless, is that which earlier authors do *not* illustrate, nor even anticipate. His influence upon our hearts comes not of what he had studied and learned, but of the richness of his insight. He was not a professed botanist, nor even an amateur florist, but we can always accept, unhesitatingly, whatever he has to say about simple Nature. G.

SHOES and cuttings of fruit trees have been worked with success nine months after being severed from the parent stock.

WATER.

IN natural landscapes, grand and peaceful expanses of water are always highly beautiful. Even on the reduced scale of garden landscape it is almost always attractive, and even an essential feature, where there is sufficient space to develop it fittingly. But where beauty is the object in small gardens, we must not meddle with water-features, which, if to be well carried out, require sufficient space. We must have no muddy duck ponds; no mere frog pits. Where it is attempted to introduce water as a feature in garden landscape, there must be ample room for the lakelet; otherwise, it becomes a mere caricature. A hole full of water covered

from every important point, sufficiently distant for a slight blue veil of intervening ether to "lend enchantment to the view;" or the distance must, at all events, be such as a man could not easily jump across, or else the so-called piece of water becomes a mere pond or ditch, and should be relegated to the poultry-yard as the muddy paradise of the water-fowl. It is not only for the sake of securing breadth and beauty in the water itself that makes it desirable to avoid artificial water in small gardens. A better reason is that water in such places must necessarily be brought much nearer the house than it ought to be. A filthy and formal piece of water is bad enough anywhere in a country place, but



A piece of Artificial Water.

either with Duckweed, or any other surface growth that so soon covers any small space of stagnant water, is in that state not beautiful—but the reverse. How many otherwise pretty places, all over the country, are spoiled by the attempts to introduce the effect of water—when there is not sufficient space for anything of the kind? A natural rivulet meandering through the grounds, be it only a mere thread of silver, is always a valuable addition, even in gardens of the most limited extent; but to attempt the effect of sparkle and repose, which is obtainable by the means of a sheet of clear water, is utterly futile unless the area at disposal be amply sufficient for its fitting display, and for sufficient breadth of water to enable the designer to make the opposite shore, as seen

it is unendurably hideous when fully seen from the windows. In Warwickshire and many other parts of England we have frequently seen wretchedly formal ponds within a few perches of the house. Frequently, to place these ponds in such objectionable positions, they are bolstered up on levels where water would not naturally lie; and, perhaps, when standing near them, one may see on the other side the tops of trees growing in the hollow where the water ought to have been—that is, if it were wanted at all. Very little consideration will suffice to point out that water should occupy what appears to be the lowest position, or, in other words, appear to be, as far as possible, in a valley. It need hardly be said that sanitary, as well as artistic, reasons point to the

necessity for not placing water too near the house. An indispensable point in the disposition of artificial water is, that its terminations should be concealed. Many natural pieces of water would look poor indeed if their whole surface were as plainly visible to the eye as a basin, and unbroken by projecting hills, trees, or the windings of the water itself. In the case of the pieces of artificial water we have alluded to, the margin is frequently as clearly defined as that of a fountain basin. It is quite easy, in forming a piece of artificial water, to conceal the terminations by planting, or by the placing small islands, so as to give it a very natural expression, and even to apparently add much to its real extent. In many cases, where the designer has neglected to veil the termination of the water so far as its plan is concerned, much may be done by judicious planting; but this should never interfere with the best aspects of the water, as it may be seen from the most frequented points of view, and much of the ground near a piece of artificial water should be devoted to gently-graded turf. The violent railway-embankment-like slopes, so commonly seen where the landscape gardener has been at work, are hateful. The pretty sheet of water devised in the accompanying illustration is not intended, necessarily, to exceed an acre; but, by concealing its real boundaries by means of promontories or islands, its extent has been made to appear much greater. From every important point of view a turn or slope should be made to appear as a channel leading on to other portions of the lakelet; though, in fact, its absolute termination is only concealed behind a promontory. The points of view from which the greatest apparent extent of the water is visible may be forced upon the spectator by the direction and nature of the approaches—as shown in the present design—while those points from which its real termination would be visible, must be rendered inaccessible by plantations and other natural devices. If the apparent cause of the lake or lakelet can be made to appear as a streamlet pouring down in a series of small cascades, as in our illustration, so much the better, as the general illusion of Nature in the midst of art, is thus rendered more complete. Finally, the banks and beaches must be naturally designed; there must be no regular or rigid outline, and the banks must occasionally sink into low gravelly beaches, losing themselves in the water, and in other places they may rise as high as the situation will admit. These heights must be clothed with brushwood and shrubs, and in one or two places, but not more, a weeping tree may be planted, not omitting a Kilmarnock Willow. Reeds must be very sparsely introduced into the shallows, as they spread rapidly, and even Water Lilies, so beautiful when only one or two groups appear, must not be used too freely. Water Lilies, the white and yellow, if too profusely planted, and not sedulously kept down, will sometimes entirely choke up a sheet of water in a very short time, and make its surface as green as a meadow. H. N. H.

Peach Kernels Poisonous.—It is not generally known, as it ought to be in gardens, that the kernels of some stone fruits, especially Peaches, contain prussic acid to an extent which may prove poisonous if a large number of the kernels be eaten. The following case, reported in the last number of the *Australian Medical Journal*, by Dr. W. R. G. Samuels, of Wanganui, New Zealand, should make parents cautious:—"I was sent for to attend a little boy, aged five years, the son of a carpenter of this town. On my way I was informed that the little fellow had eaten something unknown to his parents, and was believed to have been poisoned. On my arrival, I found him lying on the sofa in a state of partial coma. The pupils were dilated, the skin somewhat cold and clammy, the pulse feeble. He seemed, in short, to be suffering from the effects of some narcotic poison. Upon making inquiries, I was informed that about half an hour previous to my arrival he had been seized with dizziness, stupor, fainting, inability to stand without assistance—in fact, it was described to me as partial intoxication. He vomited 1 oz. or more of masticated Peach kernels. I at once administered an emetic, followed shortly by a full dose of castor oil, which soon acted on the bowels. I ordered him to be kept warm. After being placed in bed, he slept for about two hours, after which he awoke and seemed recovered. This was obviously a case of poisoning by hydrocyanic acid (prussic acid) contained in the Peach kernels, of which the child had eaten a large quantity."

THE FRUIT GARDEN.

FINE CROPS FROM YOUNG VINES.

THE way in which Vines are cropped is an important matter, as regards successful cultivation; over cropping is a great evil, and under cropping is equally injudicious. If over cropped, although free from insects, the bunches will be found to be deficient in colour and size, and comparatively destitute of flavour; shanking, which yearly destroys so many Grapes, is often attributed to imperfect root-action, but I am persuaded that in many cases it is induced by over cropping. Some varieties suffer more from over cropping than others, a remark especially applicable to Muscats of all kinds, while a much heavier crop than any of the Muscats could finish, is found to suit the Golden Champion, and other large-berried sorts, as in that case the excessive flow of sap is absorbed and the berries prevented from cracking. Under cropping is wasteful, as in that case the strength of the Vine is wrongly directed, and the crop is deficient. To allow only six bunches to remain on a Vine when twelve equally good ones might have been obtained, betrays bad management. I have frequently heard of, and sometimes seen, light crops sanctioned for exhibition purposes, but the best prize Grapes I ever saw were cut from Vines that were bearing a full crop. No very correct standard can be set up as to what constitutes a proper crop; according to some, a bunch to every alternate shoot should be allowed; this, however, depends on the size of the bunches; others recommend a certain weight for every square foot of glass; but what I consider the best guide is the strength of the Vines. Some Vines would produce forty pounds of Grapes with ease, while others of the same dimensions and age would fail to finish off properly twenty pounds. The capabilities of the Vine, therefore, whether great or small, should always be taken into consideration. This is the best of all tests, and one which, when applied with discretion, never fails to prove correct. Not a great many years ago, few Vines were allowed to bear fruit until they were three or more years old, and a full crop was not considered obtainable from them till they were more than double that age. Vine growers of the present day, however, find no difficulty in getting a full crop from Vines the third and fourth year after they have been struck from eyes, or in other words, Vines now-a-days, are allowed to bear full crops at an age when formerly they were not allowed to produce a single bunch. I have never known any premature failure or untimely end to result from early cropping. Indeed, I have seen better Grapes cut from Vines three years old, and which were continued to be produced for successive years, than ever I have known to be taken from Vines which were denuded of their fruit, under the impression that that operation would have the effect of husbanding their energies until they were six or seven years old. A Vine thus treated may make stronger wood than it otherwise would do, but strong wood is by no means the most fruitful or lasting. The best crops of Grapes I ever recollect having seen, were in two houses at Drumlanrig, in 1872. These were on Vines struck and planted in 1870, and when I saw them they were not only bearing, but had superbly-finished, eight, ten, and twelve great clusters each. Unfortunately, these fine Vines, as has been stated in your columns, were destroyed by Phylloxera, but they were immediately replaced by young ones in 1873, and this season the latter are bearing crops equal to those on many four-year old Vines. When I first saw the Vines at Tweed Vineyard they were two years old, and were bearing eight and ten bunches each, and anyone who saw these Vines then, or may have seen them since, will have little apprehension of untimely failure. The Grapes with which Mr. Hunter, of Lambton Castle, obtained the first prize at the great International fruit show in Glasgow in 1872, were cut from Vines raised from eyes in 1869; and Grapes from the same Vines carried off all the leading prizes at the grand International show in Manchester in 1873. I saw the Vines soon afterwards, and the crop was abundant and excellent. The Black Hamburgh Vine, from which the 13 pound bunch was cut, had seven clusters hanging on it, none of which were under 4 pounds, and some nearly as large as the "big one." These cases do not relate to extraneous produce, but to that of permanent Vines, which will continue to perfect fine crops for years. Still, notwithstanding the advantage of

such management, early and full cropping is not carried out as it should or might be. Judging from what I read in a contemporary, six and seven bunches, on Vines struck from eyes in 1870 (nearly five years ago), is considered an exemplary crop in some quarters. If Vines are at all what they should be at that age, they are capable of bearing far more than that amount with impunity, especially such sorts as Golden Champion, Trebbiano, Lady Downes, and Black Alicante. Borders have always an intimate connection with the production of good, bad, and indifferent Grapes, and success in the cases just cited, are attributed to the borders. These were made in the simplest possible manner with turf, to which was added one handful of bones to the cartload. J. H. M.

STONE FRUITS AND HARD SOIL.

It has often occurred to me, while observing the fruit trees growing on the walls of houses in many of the villages throughout England, especially in the southern districts, that the firmness of the soil has much to do with the longevity, hardiness, and fruitfulness of these trees, which are generally loaded with fruit of very fair quality. There is little attention given in the way of cultivation; all the training they get is a cut here and there to prevent the young branches from pulling the old ones from their fastening. They must have grown apace at some period, as large breadths of mason-work are covered with single trees, such as are not met with in many gardens. In this locality (Oxford) Apricots have been famous for many years, and great crops have been gathered; and the industrious villagers have often been able to pay their rents from the old trees on the ends of their houses. It has appeared to me in most cases that these veterans have been planted with very little care—probably a hole had been made large enough to twist the roots into, and the soil replaced over them, and rammed down as if to form part of a floor. The hard-trodden gravel (in many cases causeway and pavement), would lead one to suppose that moisture could never reach the fibres, but I suppose the fibres must travel to the moisture; a wide street is generally the space where the border should be. Other trees have the usual outhouses standing over the space where the roots are supposed to find their food. It is evident there must be food, or where is such fine foliage and luscious fruit manufactured? Vines are met with often growing under the same circumstances; one on a tradesman's house in a town not far from here, is something wonderful in its way—the kind is the black Esperione. I am told that it has produced heavy crops for many years past, and this year the bunches almost touch one another. There are only a few inches of open space between the pavement and base of the house front wall. The pavement and causeway together, between the Vine and the street, may be 12 feet wide, yet this Vine luxuriates, and supplies its owner with plenty of fruit, which is used generally for wine-making. Without discussing the matter further, is there anything we can learn from these trees, which are more productive, of stronger constitution, and less liable to disease than the finest-trained trees under the care of some of our most distinguished gardeners? From experience, I believe that the firmness of the soil prevents over-luxuriant growth, inducing the roots to become a mass of healthy fibre, instead of their sending out large soft feeders, drawing up large quantities of water, which remains in the branches till the short dark days of winter. No fruit-buds are matured; the buds start early into growth long before they are safe from frost; the sap, which has been flowing freely, receives a check; nothing is seen at the time, but before summer has advanced very far, a large limb (perhaps the healthiest-looking in the tree), dies off suddenly; it is cut out, other branches die off in the same way, and the poor tree is sadly deformed. Cases similar to this are met with all over the country, and yet we have found no preventive.

One thing I would suggest to young planters—that is, never accept a tree which has been often cut back in the nursery, or one which has not been properly cut. When pieces have been left, the branches are always liable to die back where these pieces have been attached. When the cut is clean and

properly done, the bark will grow over, and the wound will heal up nicely. When planting is done, never use manure (except for mulching, to keep out frost or drought); let all the soil, after it has been prepared, be made as firm as a rammer can make it—if stones are plentiful, so much the better; the soil may be placed over the roots, and made only moderately firm. Endeavour to get the tree to start freely, and use the knife only where it cannot be avoided. When the roots have run a little, they will come in contact with the hard-rammed soil, and will throw out fibre in all directions, which will cause the tree to grow sturdy, and the young wood will become very hard. When any shoot takes the lead, and is likely to monopolise the whole growth, take off a joint or two at the top, and a number of small shoots will spring up; train them over the empty space, and the foundation of a sound tree will be formed. Avoid the use of the knife in winter, if possible, and, if root-pruning should become necessary, let it be done early in the autumn; but examine the roots first at one side, taking off none except they may be going downwards, or away from heat and air; replace the soil, or fresh loam instead, ram it as hard as possible under the roots, lay every fibre carefully in its place, and cover them over as before. A very small portion of the tree thus treated will be enough to check unnecessary growth, and large firm leaves, plenty of natural fruit-spurs, and a hardy tree, will be the reward. The cutting round the whole tree with a spade, as some have done, is reckless and mischievous in the extreme. If too rich soil should be the cause of watery growth, lift the tree and mix some lime rubbish in the earth; ram it down, lay out the roots over it, and place 6 inches of loam over them. This should be done in autumn, when the leaves are about to fall. We should never despise the lessons which old trees in cottagers' gardens teach us, but search out the cause of their success, and it will be found that the roots are in their natural element; and the roots of our own trees, which are growing at railway speed, are in unusually rich quarters, where they will luxuriate till they bring about their own destruction.—*Gardener.*

Fruit Crops in Roscommon.—Apples here are a very heavy crop, especially Hawthornden, Devonshire Quarrenden, Juneating, Ribston Pippin, Kerry Pippin, Lemon Pippin, and King of the Pippins; Pears are a light crop, as are also Plums, Damsons, Cherries, and Filberts; Peaches, Nectarines, and Apricots are not grown outside here, with the exception of one tree of the Moorpark Apricot in a very warm sheltered spot, and that is bearing a full crop; Raspberries are always good here—this year the second gathering was larger than the first; of Strawberries, some sorts were very fine, and a heavy crop, more especially Eclipse, President, British Queen, and Wizard of the North. From the latter I am now gathering (July 27) at the rate of 5 lbs. every day. It is, in my opinion, the best and most prolific Strawberry which we possess, Frogmore late Pine being over a fortnight ago, whereas the Wizard will run on until the middle of August. Gooseberries are a heavy crop, and the fruit large; Black Currants were an extraordinary crop, and the berries large; Red and White Currants also a heavy crop, notwithstanding no manure has been applied to them for five years.—JAMES CLEWS, *Rockingham, Boyle.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Rivers's Early Prolific Plum.—This Plum, to which such favourable reference has been made in our fruit reports of this disastrous season, is very largely planted in the pyramidal form, so as to allow of good crops being grown between, at the Sawbridgeworth Nurseries by Mr. Rivers, jun.

Large Apple Trees.—Can any reader give us the measurement of any very large Apple trees? Henry Ward Beecher describes a tree at Peckskill as 14 feet 10 inches round at 4 feet from the ground. Have we larger specimens than this?

Golden Champion Vine.—Have any of your readers who fruit Vines in pots grown this variety? I am told it succeeds in a very perfect way under this system. It would be a noble looking Grape in a pot, as it is, indeed, anywhere. I should feel obliged to anyone who would kindly favour me with trustworthy information as to where it is grown well in pots.—J. M.

Raising Apple and Pear Stocks mixed together.—I read in one of the last numbers of *THE GARDEN* a notice that a kind of Sorbus will grow better mixed with other kinds of trees than by itself; it was observed that this was even the case with seedlings. In the nurseries of Germany and France, Pears and Apples sown for stock are mixed together, and everybody who tries it will find that both, but especially the Pear stocks, grow much better and more vigorous that way than by themselves.—G. WEBBING.

THE KITCHEN GARDEN.

VEGETABLE MARROW CULTURE ROUND LONDON.

VEGETABLE Marrows constitute one of the principal summer crops in the immediate neighbourhood of London, and, where soil and other conditions are favourable, they are very productive. They require, however, a rich and substantial soil, liberally manured, and also one that does not readily become parched in summer; therefore light and dry soils are not so suitable for them as such as are heavier. Mr. Poupart, a market gardener at Bermondsey, used to grow Vegetable Marrows there in great abundance, but when he was obliged to move to the neighbourhood of Mortlake, in order to make way for bricks and mortar, he discontinued their culture owing to the expense incurred in watering them, the land being lighter and dryer. Their marketable value is various; sometimes they hardly pay the grower, whereas, at other times they are highly remunerative, much depending on the scarcity or abundance of Peas, French Beans, Cauliflowers, and other vegetables. Last year Mr. G. Steel's first crop became marketable about the first week in June, but he could not command any sale for them, and consequently had to cart the first gathering to the rubbish heap; afterwards the demand became greater, and the price accordingly higher. Early in March hotbeds are erected for producing Vegetable Marrows, Cucumbers, Celery, and other plants from seeds, the Marrows being either sown thickly in pots or pans of common soil plunged in the beds, or broadcast on a bed with a few inches deep of soil placed over the fermenting material. As soon as the plants show two rough leaves, they are pricked into other beds or into pots. The usual method is to prepare a series of frames set on slightly heated hotbeds; on the surface of these place a few inches deep of soil, into which plunge 6-inch pots, filled with common garden mould, to the brims, as thickly as they can be stowed together. Into each of these pots two Marrow plants should be dibbled, and here they should remain till planting time, hardening them off by gradual but increased exposure in fine weather. The first plantation is made out of doors during the first week in April, but the plants make little progress until the end of the month. The ground is marked off in lines for them about 10 feet apart, and each plant is about 6 or 8 feet asunder in the row. Where each is to be planted, a hole about 20 inches deep, and 2 or 2½ feet wide, is dug out and filled with fermenting manure, which is covered over with the soil that has been thrown out in the excavation. Here the plants are planted, the contents of one pot being put in every ridge, and covered over with hand-lights or large cloches. A little earth is at first drawn around the base of the lights, so as to keep all close and free from cold currents of wind, and, in the event of frosty or cold windy weather setting in, mats or litter are also placed around and over the lights. Excited by the heat from the fermenting manure beneath them, and protected from cold overhead, they are almost as snug as in a hotbed, and consequently they soon take kindly to their new quarters, form fresh roots, and begin to grow. When this is the case, the lights are tilted up a little on the south side, by means of half bricks or small flower pots, during favourable opportunities, but shut up at night. When growth, however, begins to make rapid progress, the lights are left a little tilted up at night, so as not to injure the shoots that are pushing forward, and require more room than is afforded under their little glass houses, until finally the lights are entirely removed, which will probably be in the latter half of May. This plantation, when it does begin to grown in earnest, grows most rapidly, and from it fruit is generally cut in the first or second week in June—much certainly depending on the warmth of the season. Large growers have generally from four to six plantations of Marrows, each succeeding the other by a fortnight, so that the last planting is made late in June. The seedlings are all raised on hotbeds, as already described; but I have known instances in which the seeds have been sown in June, in clumps of four, where they are intended to remain permanently in the open fields, and afterwards reduced to two; this plan is, however, a very uncertain one. Until the middle of May the plants are planted out on the manure pits, as in the case of the first sowing; but less care is necessary for them. Where

the supply of lights and cloches is deficient, round vegetable half-bushel baskets are used; but, unless these are covered with mats or litter, in the case of frosty winds the plants beneath them often perish. After the middle of May, lines are drawn on the open fields at the required distances apart, and the Marrows are turned out of their pots and planted in the ground, which received no further preparation than that of a slight digging. If the weather be warm and genial, they generally do well, if cold and wet many of the plants frequently succumb; but the blanks are made up from a reserve stock, which is always at hand to meet such emergencies. Although the distances apart of the first planting is 10 feet by 6 or 8 feet, that of the June plantations is 15 feet by 10 or 12 feet, and the intervening crops are planted at corresponding intermediate distances. The earliest crop is planted on ground just cleared of Radishes and Celery, or, if the Radishes be not cleared at the time of planting, the Marrows are planted in every alternate alley between the beds, thus permitting the Radish crop to be removed at convenience. For the later crops, ground occupied by spring Spinach, Radishes, autumn-sown Onions, Cabbages, or Cauliflowers, forms a good medium. The space between the rows is not, lost during the minority of the Marrows, but is cropped to within 2 feet of them with Lettuces, in addition to which there are generally three or four lines of Cabbages or Cauliflowers planted along the centre of the space. Turnips also sometimes form the inter-crop. When the Vegetable Marrows begin to grow, if the weather be dry, little basins of earth are drawn to them with a hole for the retention of water, of which they get a good supply until their foliage covers the ground, and thus prevents speedy evaporation from it. The plants begin to fruit when the vines are 3 feet or so in length, and continue growing and fruiting until frost, drought, or mildew renders them useless. In a dull rainy season, provided it is warm, they thrive apace and fruit heavily; but in a hot and dry one they are short-lived and unprofitable. When they are growing pieces of stone or brick are sometimes placed on the advancing vines or they are pegged to the ground, to cause them to root at the joints and thus afford themselves increased means of support. No care is, however, taken of them as regards thinning the overcrowded vines; but sometimes the growers mulch the ground with litter, which not only enriches it, but preserves its moisture, prevents to some extent evaporation, and keeps the fruit clean from grit. As soon as the plants begin to bear, every fruit is gathered when it attains a marketable size, no matter whether they are sold or not, for if any were left too long it would tend to render the plant less fruitful. They are gathered three times a week, the gatherers being supplied with fruit-collecting baskets, a stick, and a knife. With the stick they turn aside the leaves of the plants in search for the Marrows, and they are thus enabled to go over the ground quickly, and without much bending of the back. When each gatherer has filled a basket, it is carried to the outside of the plantation, and emptied into a heap, or into large baskets or a waggon stationed there to receive them. The trampling the Marrows seem to undergo in the process of gathering does not seem to injure them much. In August some good fruits are selected and marked by inserting an upright peg alongside of each, and these are allowed to remain untouched till ripe, when they are cut and placed within frames or in exposed situations before the sun, so as to become thoroughly ripened. They are afterwards placed in a corner in some of the sheds, to await a convenient season for extracting and washing the seeds. After the middle of September Vegetable Marrows are commonly useless, and the demand for them diminishes; consequently they are not after that time worth the ground they occupy. Sometimes they are cleared off the ground at once, and at other times they are left until frost completely kills them; but in all cases the haulm is raked off and carted to the manure heap before manuring or digging the ground, which is usually planted at once with Coleworts. Custard Marrows are grown out of doors on the same system as early Vegetable Marrows; but, as they are weaker growers than the latter, they are only planted about 8 feet by 6 feet apart. The ground is also, as a rule, mulched all over, and in the event of dry weather they get occasional good waterings.

THE ARBORETUM.

SPIKE-FLOWERED BIRD CHERRY.

(PADUS CORNUTA.)

THIS species, the origin of which is unknown, has been grown for many years in the gardens of the Muséum at Paris, where it first flowered in 1869. It forms a very robust and hardy shrub from 13 to 20 feet high, with exceedingly thick, and comparatively short, erect branches, covered with a deep red, almost black, shining bark. The shoots, from their first appearance, are furnished at the base with long and broad stipules of a deep red colour, which continue for a considerable time. The leaves are oval-elliptical in shape, ending in a short point, undulated, a foot or more in length, and nearly 4 inches broad; at first of a rusty colour, but afterwards becoming green and shining on the upper surface, and glaucous underneath. The flowers, which are white, are very numerous, and are disposed in dense erect spikes, as shown in our illustration. This shrub is very ornamental, both in habit and foliage, in which it somewhat resembles *Syringa Emodi* (Wall.), that is, in its general aspect. It flowers in April and May, and is easily multiplied by grafting on the common



Horned Bird Cherry.

Padus (*P. racemosa*—Spach.), which itself is a very handsome shrub, and one that deserves more extensive cultivation.

W. M.

MISMANAGED TREES.

IN suggesting the necessity for uprooting a tree, however much misplaced it may be or injurious to other trees of greater importance, we generally meet with as much repugnance as one would encounter in a proposition for removing a house, unless the individual happens to have some knowledge of arboriculture or is acquainted with the principles of landscape gardening. Hence may be seen in nineteen-twentieths of such places as those under consideration innumerable instances amongst the trees and shrubs of a struggle for life that goes on until a portion, and generally those of the greatest importance, die, leaving those behind half killed and in a condition from which they never recover, through the effects of the fight for food and air in which root and branch have so long been engaged. The fatal effects of this overcrowding are most apparent after seasons such as the present, when the comparative absence of water in the soil through the spring is followed by a hot, dry, rainless summer. Throughout the country, in extensive tracts of land, resting on a sand or gravelly stratum, the soil at the present time in which the roots of the trees are placed is as dry almost as the dust

on the surface, and which the ordinary rainfall of any single season will never moisten. Where trees are too much crowded in dry seasons their roots extract the moisture from the sub-soil to such an extent as almost to preclude the possibility of its afterwards becoming moistened deep down, where the principal feeding roots exist. Frequently in removing trees so placed even after very wet seasons, I have found that when the first 2 feet of the surface soil were removed the earth underneath was as dry as dust—the water evidently having found its way further out from an apparent inability to enter the dry impervious mass, which, in all probability, when once reduced to this state, never after gets sufficiently moistened to be in a condition fit for the support of healthy vegetable life. Again, on the boundary line of places such as those under consideration, how often do we see good intentions defeated through mismanagement. To secure the wanted privacy, or hide something objectionable, trees are planted with little or imperfect preparation of the ground, which just receives a shallow digging, after that they are planted as closely as possible, the intention being to accomplish the object in the least possible time, forgetting that, however good the land may be, there is still a limit to its capabilities in supporting vegetable life. In exposed situations sufficiently close planting is necessary, the hardier trees acting as nurses to such as are more tender; but too often we see the nurses, instead of being removed when their services have ceased to be required, allowed to remain all intergrown, until the under branches of the whole are destroyed, leaving the weakly attenuated stems standing like a plantation of clothes props, showing most objectionably their inability to fulfil the purpose for which they were planted. In all cases such as those in question the preparation of the land should be of a nature to give a reasonable chance for the well-doing of the trees after they have been planted. This cannot possibly be done unless the ground is trenched 2 feet deep, if its character is such as to admit of this depth. The trees should be judiciously selected with a view to their adaptability to the nature of soil and locality, and not too closely planted; as they grow up thinning should be carried out with judgment, and at the proper time. Where the treatment is in accordance with these simple rules, especially as to timely thinning, there need be little anxiety as to the result. I have frequently remarked that a great number of people in planting forget that the trees they plant will ever get any larger; and that others appear to think that everything planted should be allowed to remain for time indefinite. In the inner or more central parts of suburban places, in addition to the mistaken management of the existent trees, any after-planting that is carried out is often of the most objectionable character, not only as to the description of the trees selected, but the position in which they are placed, and the preparation of the ground. In the selection preference is frequently given to Coniferous trees, the whole of our fine deciduous trees being excluded. A greater mistake than this cannot possibly be committed, if we think of the distant future; for the time will inevitably come when the existent deciduous trees will decay, leaving nothing to take their places except such of the Conifers as are ultimately found capable of withstanding the severest frosts experienced at long intervals. Then, as to position; instead of leaving the all-essential open vistas, so indispensable to give breadth, repose, and impart general effect, the dotting system is perpetrated, having much the appearance of an orchard on a large scale, with the trees at more than ordinary, though regular, distances apart. This is a glaring mistake, and one that is much on the increase. If we come nearer the mansion how often do we see a *Sequoia*, or some other monarch of the forest, placed so near that by the time it has fairly begun to show its character it will become a matter of necessity to remove either the tree or the house. In the preparations for planting these trees the common mistake is often made of digging the ground over a considerable depth without anything in the shape of a drain to carry off the water that is certain to accumulate in the newly-loosened soil, which acts as a receptacle for the water that drains into it from the surrounding ground, thus precluding the possibility of the tree so placed thriving as it should do.

T. BAINES.

THE BAMBOO IN EGYPT.

A PAMPHLET has been published at Cairo by the Agricultural Department of Egypt, on the Indian Bamboo, which it is said, is being acclimatised there with great success. We append a few notes therefrom:—The gigantic Bamboo, which is of colossal dimensions, growing to the height of 20 metres, with a circumference of 40 or 50 centimetres at the base (say 65 feet high and 15 to 18 inches in circumference), from the joints of which, especially those of the middle and upper parts, grow numerous branches with long leaves, is the most vigorous species of this arborescent plant. It was intro-

duced some years ago into the gardens of the Khedive of Egypt, at Ghézireh, from whence it has been multiplied in two or three other gardens of Egypt. It was so much admired by the Emperor of Brazil, on his visit to the gardens of the Khedive last autumn, that he expressed his determination to import it into Brazil, and to cultivate it upon the Imperial estates as a shade for animals during the heat of summer. The gigantic Bamboo originates in India and China, and is highly appreciated wherever it is cultivated, being used for posts in pavilions and the houses of the inhabitants. The hollow joints are utilised for carrying liquids, for flower-vases, &c., and in China, and especially in India, for bottles and tobacco-boxes, highly wrought and polished and sold at great prices. The larger stalks are also used for bridges, water pipes, and carts and other vehicles. In fine, the wood is employed in the arts, in a multitude of industries, and for implements of agriculture. This species of Bamboo vegetates with such rapidity that it can almost be said that one can see it grow. Its progress may be seen from day to day, and at Ghézireh it has been known to grow 9 inches in a single night. A humid soil is congenial to the gigantic Bamboo, although it suffers under a prolonged inundation. It is proposed in Egypt to cultivate it upon the borders of the canals in the vast domains of the Khedive. There is also in the gardens of Egypt another species of Bamboo, believed to be the *Bambusa arundinacea* of Willdenow. It presents the following characteristics:—The stalks are smaller and shorter than the gigantic Bamboo of India; it attains about 12 metres (39 feet) in height; it forms larger tufts or clusters than the great Bamboo, and throws out a greater number of stalks, which are furnished with numerous slender and flexuous branches, bearing ordinarily tolerably large thorns, a little arched at the joints or articulations, and the leaves are smaller than those of the gigantic species, being rounded at the base, lance-shaped, tapering to a point, and a little downy. There is another species of Bamboo which it is proposed to cultivate in Egypt. It attains a height of 5 or 6 metres, produces enormous clusters of canes, about the size of the finger, and makes excellent props for use in horticulture. A plant of two or three years' growth will furnish a hundred stalks, forming a cluster of vast size. The species is the *Bambusa edulis*, so called from the fact that its young shoots are edible, and in China regarded as very nourishing. There is still another species of Bamboo to which the attention of the cultivator in Egypt is called. It is the black Bamboo (*Bambusa nigra*). It is distinguished principally by its slender branches, which are of a fine black colour, and from which canes are manufactured extensively for exportation. Pens are made from the smaller stems, which are commonly used for writing in Egypt.

THE SILVER FIR.

(*PICEA PECTINATA*.)

By C. Y. MITCHIE.

THE common Silver Fir, *Picea pectinata* (Picea of Linnæus, but *Abies* of some other writers), is one of the most picturesque and ornamental of forest trees, and in some cases the most handsome of the Coniferae. At times it diverges from the beautiful into picturesque and even grotesque. With all deference to Gilpin's admitted good taste, he has evidently failed in displaying it here, when he speaks of the Silver Fir in the following strain:—"The Silver Fir has very little to boast in point of picturesque beauty. It has all the regularity of the Spruce, but without its floating foliage. There is a sort of harsh, stiff, unbending formality in the stem, the branches, and in the whole economy of the tree, which makes it disagreeable. We rarely see it, even in the happiest state, assume a picturesque shape. Assisted it may be in its form when broken and shattered; but it will rarely get rid of its formality. In old age it stands the best chance of attaining beauty." The Silver Fir was introduced from Germany or Switzerland, by Sergeant Newdegate, in 1603, who planted some at his residence at Harefield Park, Middlesex, and which, according to Evelyn's account, became very large trees. It is a tree that attains to an immense size, both in this and other countries, and grows to 150 years of age under favourable circumstances. We are informed by those travellers who have seen it growing in Switzerland, Germany, and France, that it appears to luxuriate under circumstances similar to the Larch, but prefers a rich dry soil, though at times it is found on ground rather poor, but not gravelly. The Silver Fir is propagated chiefly from seed, which is ripe in November; but it can also be readily propagated by cuttings and layers. We have also seen a considerable number of trees that had been blown down with the wind at different periods, which had struck root in the ground all along that side resting upon it; and this not only with young trees, but with others also exceeding forty years old. The roots also possess considerably more vitality than any others of the Coniferous common forest trees, and not only remain longer in a vital

state after the tree is cut down, but make an effort to prolong life, as is seen in the exuding resinous matter around the top of the stool, between the bark and the sapwood. We never observed any tree actually produce shoots (termed stockshots) in the same manner as hard-wood trees do; but in cases where the tree is cut over at such a height above the ground as to leave a few living branches upon the stool, they often produce vertical shoots which would become trees. Another peculiarity of the Silver Fir must be familiar to most foresters, in its proclivity to produce vertical shoots at any part where an accident or injury has occurred, or when the top or limb is broken off. It is in connection with this peculiarity of growth that double tops are produced, for it possesses, in common with hard-wood trees, the quality of producing shoots of two distinct kinds, viz., those that grow horizontally and spreading, termed branches, and those that grow upright, and which constitute the stem or trunk. Probably every other tree as well as that of the Silver Fir possesses that inherent power of producing both kinds of shoots, and only require to be placed under peculiar circumstances in order to develop them; but the Silver Fir undoubtedly possesses it in a much higher degree, and different from all others of the Coniferous class of forest trees, at least the common Scotch Pine, Norway Spruce, and Larch; though the Larch, it must be admitted, possesses it to an appreciable extent. So different, varied, and even conflicting are the accounts given of the culture and success of the Silver Fir, that many persons have been induced to plant it extensively to the exclusion of the Larch, Spruce, and Scotch Pine; while others have been so far influenced on the other side as to have abandoned planting it altogether, each party believing they have sufficient grounds for acting as they do, and are justified in the course they pursue. Without arrogating too much, we shall endeavour to show at least some of the reasons for each party maintaining their own views and acting upon them, and how far each is right in going to the extreme to which they go in either direction.

In almost every county of Scotland, very fine specimens of the Silver Fir are to be met with, growing upon a diversity of soils, and variously situated, both in regard to shelter and altitude. We have seen it grow well upon almost all soils, except gravel. On such gravel at least Scotch Pine, Birch, and Larch, will grow tolerably well upon, Silver Fir appears not to succeed. We have sometimes thought that we knew cases where this rule was violated; but on examining the soil, and especially the sub-soil, we found that although the surface presented gravel, the sub-soil was of clay or sandy loam. The counties of Moray and Inverness are proverbial for their extent of gravelly and sandy soils, and these counties generally are ill adapted for the growth of Silver Fir. In corroboration still of this opinion, we met with Lord L., of B—— Castle, a few months ago, and this nobleman, being eminently versed in forestry, entered into a conversation about the Silver Fir, and his lordship informed us that Silver Fir does not succeed upon his estates in Inverness-shire, but invariably lose their leading shoots at 10 to 20 feet high, and many fail long before that stage of growth. On further inquiry, we found that the soil, where the failures occurred, was of a gravelly and sandy description, which probably accounted for it. We know of some fine healthy growing Silver Firs situated upon very cold and wet clay, and upon such soils they are certainly the finest specimens of any forest trees in their locality. The counties of Dumfries, Peebles, Selkirk, and Roxburgh, comprise soils at once the coldest and most clayey and wet of any in the country; and yet in each of these counties are to be found splendid Silver Firs. Take for example those trees in Mainswood, near Durrissdeer, Dumfries, some of which contain 200 cubic feet; or those at Cowhill, near Dumfries, of equal size; on the roadside at Annan; and also at Dumcrieff, near Moffat, all of which are noble trees. Or again, look at those splendid specimens at Stobo Castle, and Dawick House, Peeblesshire, or those at Oldhouse of Killearn, Riddell, and Borthwick Brae, and also at Stobs Castle, Branhholm, Wauchope, and many other places that might be named. We have remarked that soils, however cold or clayey, do not injuriously affect but rather favour its growth; and we would next glance at the altitudes at which it is found to succeed. These as may be conceived cannot definitely be ascertained; but we know of large Silver Firs growing at altitudes over 1,000 feet, and we are informed by others that they know of them of immense size at nearly 1,200 feet altitude. Taking therefore the two circumstances together, coldness of soil, and the extreme altitude at which it grows luxuriantly, there can be no doubt as to the hardness of the tree in relation to those influences. In regard to situation, it appears very accommodating, and is found growing well in any. But judging from the appearance of old trees, we are inclined to think it will attain the greatest age and largest dimensions in a northern aspect; and in such, the trees appear less disposed to become forked or double topped, but prolong their upward growth with fewer interruptions; hence becoming taller than in southern exposures. Having stated several

advantages of the Silver Fir, we shall state a few objections to it. After a minute and careful examination of all the various circumstances connected with the culture of the Silver Fir, we are led to the conclusion that those influences which most injuriously affect it are its liability to spring frosts injuring it, which occur after it has begun to grow, and being then exceedingly tender, it is very apt to be injured by the frost. In addition to frost, there are evidently other influences which injuriously affect the Silver Fir, it may be exposure to a low temperature, or it may be easterly winds, or other atmospheric influences. This distinctive influence, be it what it may, so far affects the trees of all ages by causing them first to decay on the top, and ultimately causing the whole tree to perish, that the magnitude which it has assumed has caused no small alarm and loss to proprietors. This influence, which, in the writer's opinion, is different from frost, whose effects are visible to the eye, is succeeded by the insect popularly known as the mealy bug. And with many it has long been the established opinion that it is the cause, and not the result or consequence of a predisposing cause. It is not, however, essential for our present purpose to know which is the primary and which the secondary cause; but it is nevertheless, to be deplored that through this influence the culture of Silver Fir is rendered precarious and uncertain, so much so indeed that many persons have ceased to plant it. Many Silver Firs have doubtless been thrown into disease by being planted upon land in a state of cultivation, or in other words, by being manured. The effects of manure upon certain Coniferae is so hurtful, and often fatal within a very few years, that most people avoid it entirely; but ground is often planted in which both sufficient manure and lime are present to prove hurtful without a ray of suspicion being awakened respecting them; or of the future failure of the plantation, when it occurs, having even a remote connection with the lime and manure present in the soil when planted. Why one tree should decay and another close by it survive and flourish is a matter involved in mystery; but if we consider that in a plantation of any description there are trees that come early into leaf, and others that are late, differing as much as twenty days or more between the earliest and the latest in foliating, we need not be surprised at the different results that take place throughout the whole period of the tree's existence. And in the event of frost being the sole influence which affects the Silver Fir injuriously it is easily discernible how the results are brought about. If, for example, a frost should occur a few days after the earliest plants have foliated, they would, of course, fall its victims, and those later of foliating for that season escape. And, on the other hand, should a frost occur twenty days after the first or earliest plants have unfolded their leaflets, the latest ones in leafing would suffer, while the earliest ones, being to some extent hardened in consequence of being so long in leaf, would, in like manner, escape. A repetition of frosts upon a certain plant may so weaken its constitution as to predispose it to disease; hence frost may produce diseases of which it was little suspected. So much in regard to the culture of Silver Fir; we shall next state some of the uses to which it is put, and its general and comparative value as a timber tree:

First, in the market for railway sleepers there is no difference or distinction made between those of Silver Fir, Norway Spruce, or Scotch Pine; the general price for either in the Glasgow and Newcastle market is 2s. 6d. each, for what are termed 10 inch sleepers, that is sleepers 9 feet long, 10 by 5. They are seldom required to be die square, but must have a face upon the round side 5 inches broad for the chair to rest upon. When clean grown, it is sawn into staves and heading; but as it is generally knotty, it is not fit for that or any other purpose when cut into thin deals, in consequence of the knots falling out, to the detriment of the articles into which it is manufactured. Boards cut out of old mature trees make excellent flooring, especially for bedrooms. If of heart-wood, and put down dry, nor once allowed to become wet after being laid, the seams or joints are not liable to open as is the case with Scotch Pine; but the surface being partly very hard where the knots are, and partly soft where they are not, cause floors without carpets, or where much traversed over, to wear into holes. Boards or scantling of Silver Fir do not warp or twist as Larch or even Scotch Pine does; hence, on that account it is very serviceable for water spouts, troughs, cisterns and such like. It is an excellent wood for any purpose connected with sluices, embankments, or canals, and is specially adapted for making coffer dams. For roofing purposes there is no home-grown wood better adapted, being equally suitable for rafters, joists, beams, and lintels; but its greatest superiority is for soaking, as it does not warp or twist, or spring the nails at the ends or edges, which some other description of wood does; a circumstance which is very hurtful to the roof, as it causes the slates or tiles to get displaced. No wood is more suitable for partitions, especially to cover with paper, as it is not liable to crack and break as Scotch Pine does, nor is it so liable to worm eat as is the sap-wood of Scotch Pine. For roofing stables, breweries, dye-houses, and

other buildings where the breath of animals or steam very shortly affects the wood with dry rot, Silver Fir possesses several peculiar advantages, and lasts twice as long or even longer than Scotch Pine does. It is very well adapted for fencing purposes, especially for posts, and in wet ground remains sound much longer than the sap-wood of Scotch Pine. It is not so suitable for rails (especially top ones) as for posts, as it is apt to break at the knots; but where the wood is clear of knots, and of moderately slow growth, it makes excellent rails for all except the top, which should be of Larch. In manufacturing Silver Fir, it is advisable, as far as practicable, to convert it into scantlings as large as possible, which avoids breakage at the knots. From all we have seen of the Silver Fir, we conclude, that as heavy a crop of it can be grown per acre as of any other description of wood. For example, we to-day examined a group of Silver Firs, and found them growing at an average distance apart of 12 feet, and each tree on an average, containing 30 cubic feet of timber, thus making the value of the crop at the following rate per acre:—300 trees multiplied by 30 gives 9,000 cubic feet, which, at 6d. per foot, is £225. The age of the trees is about eighty years, and they appear to be quite sound and healthy. We know of no trees which, upon the same description of ground, and within the same period of time, would produce so many feet of timber, save, perhaps, the black Italian Poplar, and the Austrian and Corsican Firs; but the rapidity of its growth entails a great profusion of branches which as a consequence, produces coarse and knotty wood. A valuable crop, however, and probably the most so of any would be, say 500 trees per acre, which would necessitate such proximity of the trees to each other as to prevent undue development of branches; hence wood of finer grain and smaller, if not fewer knots. The Norway white wood, which corresponds with our Spruce, is, as may be seen in the boards, thickly but irregularly dotted all over with knots.

Remarks.

1. The Silver Fir may be planted as a mixture amongst hard-wood trees, or rather in groups, or single trees at wide distances apart amongst them, to form a contrast, at once bold and striking, amidst the rounded cloudy tops of the hard-woods.
2. It is a tree very productive of branches if allowed room to develop them, and these in turn produce coarse grained and knotty wood. On the other hand, if much confined, it is apt to contract certain diseases on the top, which dies down several feet, and sometimes causes death to ensue.
3. Its tendency and liability is to blow down with the wind, in consequence of the immense quantity of branches with which it is usually clothed.
4. The great expense of the plants compared with those of Scotch Pine, Larch, or Spruce, and tardiness of growth during the first eight or ten years.
5. The comparatively low prices derived for the wood in market, compared with many other trees that might grow upon the same soil, and occupy similar space.
6. Its liability to contract diseases, some known, others unknown, but all beyond control, and some fatal.
7. Though personally the writer is a great admirer of the Silver Fir, yet, for general forest planting, he objects to it on the preceding and following considerations:—they are, when planting, if he finds soil adapted to the Silver Fir, he plants other trees upon it more certain to grow, and likely to pay better when grown.
8. One great objection to the Silver Fir in the present day is its great liability to be destroyed by rabbits and hares, which are exceedingly fond of its bark, and prefer it to Scotch Pine, Larch, and Spruce. We have seen the Silver Firs selected and destroyed in the midst of those above named without their being at all injured.
9. Another objection to the Silver Fir is, its tendency to become forked and divide into several stems, which the wind so acts upon as to break off. These must either be pruned off at a considerable expense, or left on to the injury of the tree.
10. The knots of the Silver Fir are so excessively hard as to injure almost any sort of tools, and carpenters object to it on that account. The woodmen dread it for their axes, the sawyer for his saws, and the carpenter for his planes and other tools.
11. The knots being so excessively hard, and the other part of the wood moderately soft, it on that account wears into holes which, in floors, are highly objectionable.
12. In consideration of all the objections to the Silver Fir (not ignoring its good qualities), we are personally in favour of planting in its stead *Picea Nordmanniana*, a tree much resembling the common Silver, possessing all its good qualities and avoiding its bad ones, save that its plants are for the present probably six times dearer, but will, it is anticipated, gradually become cheaper.—*Transactions of The Scottish Arboricultural Society.*

The Pottery Tree.—Among the many vegetable products of Brazil the Pottery tree of Para is not the least worthy of note. This tree, the Moquilea utilis of botanists, attains a height of 100 feet up to the lowest branches. The stem is very slender, seldom much

exceeding 1 foot in diameter at the base. The wood is very hard, and contains a large amount of silica—not so much, however, as the bark, which is largely employed as a source of silica in the manufacture of pottery. In preparing the bark for the potter's use, it is first burned, and the residue is then pulverised and mixed with clay in varying proportions. With an equal quantity of the two ingredients a superior quality of ware is produced. It is very durable, and will bear almost any amount of heat. The natives employ it for all manner of culinary purposes. When fresh the bark cuts like soft sandstone, and the presence of the silex may be readily ascertained by grinding a piece of the bark between the teeth. When dry it is generally brittle, though sometimes hard to break. After being burned, if of good quality, it cannot be broken up between the fingers, a pestle and mortar being required to crush it.

Gas Pipes fatal to Trees.—Cuttings of Willow, the lower ends of which were placed in flasks containing a little water and filled with coal gas, developed only short roots, and the buds on the upper parts died shortly after unfolding in the air. Of ten plants in pots (varieties of *Fuchsia* and *Salvia*), among the roots of which coal gas was conducted through openings in the bottom of the pots, seven died in four months. To show that the plants were killed, not by the direct action of the gas, but in consequence of the poisoning of the soil, several experiments were made with earth, through which coal gas had passed for two or three hours daily for two and a half years. The rootlets of seeds sown in this soil remained very short and soon rotted. A plant of *Dracena* was re-potted in the soil; in ten days the leaves dried up and the roots died. These results sufficiently account for the fact, that trees planted near gas pipes in streets, so often die; the enclosing of gas pipes in wider tubes, having openings to the air, and through which currents could be maintained by artificial means, has, therefore, been recommended as a remedy. Such a plan is still more to be recommended on hygienic grounds, since it has been shown, that infiltration of coal gas through the soil, takes place even into houses not supplied with gas.—*Scientific American*.

The Hatchet-leaved Thujopsis (*T. dolabrata*).—Indigenous to high but sheltered valleys in Japan, and frequently met with in cultivation in that country as well as in China, both as an ornamental tree and for its timber, which, from its closeness of grain and durability, is highly valued, and used for a great variety of purposes. It is described as forming in Japan a lofty, handsome, conical tree, with vertical branches, gracefully drooping at the points; the branchlets numerous, much compressed, and abundantly clothed with flat scale-like leaves regularly imbricated, of a bright glossy green colour on the upper, and silvery on the under, surface. This grand species was first sent to Britain in 1854, having since been widely distributed, and exposed to the rigours of our winters in the open air without injury. It makes most progress in strong loamy or peaty soils, moderately moist, and prefers a shady situation. A fine variegated variety of this species was sent home from Yeddo, Japan, in 1861, by Mr. Fortune, who found it cultivated in gardens. This pretty plant has the branchlets more or less freely tinted with pale yellow. It has proved to be equally hardy and of as free growth as the parent, and is well worthy of a place in the most select collection.—*Gardener*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Branch-shedding in Trees.—The Aspen (*Populus tremula*) sheds its branches in hot weather more suddenly and more frequently than even the Elm. Large limbs break off without the slightest warning. There are some fine Aspens in this neighbourhood.—H. G. WATNEY, *Liss*.

Undergrowth in Woods.—How can I increase Elder and Dog-wood for undergrowth in woods? Should I take cuttings or sow seed, as I want many thousands?—K. B. [The best way of increasing Elders and Dog-wood is by cuttings, inserted in rows on well-dug ground in the autumn or spring. It would be best for you to obtain the advice of a practical nurseryman previous to commencing on such a large scale as that you suggest.—Ed.]

Extraordinary Growth of a Tree.—The following are the dimensions of a Fever Gum tree, nine years old, grown on the grounds of Gen. Vallego, thirty-five miles north of San Francisco. The tree occupied a place among his Orange and Olive trees, and approached too near his house. Not wishing to take the chance of having a severe wind throw the sapling across his house, he proceeded to lay the nine-year-old prostrate, and in that position a tape-line determined it to be 96 feet from root to top, and a cut sawed off, 4 feet above the roots, showed the diameter to be 19 inches one way across the stump, and 17 inches at a right angle the other way.—*Cultivator*.

Shrubs to Flower in Autumn.—I should like to have the names of a few flowering shrubs that would blossom in the autumn, with hints about the kind of soil best suited for each. The bank where they are to be placed is partially shaded by Oak trees, and the climate so mild that a small *Camellia* has survived the winter without protection.—M. L. W. [Japan Privet, *Rhus Cotinus*, *Spiræa*, and *Hydrangea* in variety, *Yucca*, *Fuchsias*, *Menziesia carulea*, many hardy *Heaths*, *Clematis flammula*, *tubulosa*, and others, *Leycesteria formosa*, *Escallonia* in variety, and *Calycanthus occidentalis* are all autumn-flowering shrubs which will succeed in ordinary soil, with the exception of the hardy *Heaths* which succeed best in peaty soil.—Ed.]

THE MUSIC OF TREES.

THE sounds and motions of trees constitute subtle but important elements of pleasure. It is not enough that a tree have a comely form as a whole; that it cast a dense shade in the sultry days of summer; that, perhaps, it yield a nut or fruit; and that, finally, when it gives up its life to the inevitable axe, its prostrate trunk shall furnish good timber. Besides these uses of comfort and of economy, a tree, like a rich-hearted person, has a hundred nameless ways which we hardly stop to analyse, but which, were they suddenly taken away, we should miss. The murmuring of trees is profoundly affecting to a sensitive spirit. In some moods of imagination one cannot help feeling that trees have a low song, or a conversation of leaves. They whisper, or speak, or cry out, and even roar. No one knows this last quality so well as those who have been in old Oak forests in a storm, with violent wind. A dense forest opposes such a resistance to the free passage of the air, that the sound is much deadened. But in a park or Oak-opening, where spaces are left for the motion of the air, and among open-branched trees, a storm moves with such power and majesty, that not even the battles of thunder-clouds are more sublime, and, under certain circumstances, it becomes terrific. At the beginning of the tempest, the trees sway and toss as if seeking to escape; as the violence increases, the branches bounce back, the leaves, turning their white undersides to the light, fairly scream. The huge boughs creak and strain like a ship in a storm. Now and then some branches which have grown across each other are drawn back and forth, as if demons were scraping infernal bass-voles. Occasionally a branch breaks with a wild crash, or some infirm tree, caught unawares in a huge puff of the storm, goes down with a crashing fall, and with a thunder-stroke when it reaches the ground. I would go farther to hear a storm-concert in an old forest, than any music that man ever made. No one who is familiar with forest sounds but is sure, when he hears Beethoven's music, that much of it was inspired by the sounds of winds among trees. There are milder joys, however, in tree converse. Only this morning I awakened to hear it rain. That steady splash of drops which a north-east wind brings on is not easily mistaken. I flatter myself that my ear is too well trained to all the ordinary sounds of Nature to be easily deceived. I rise, and throw back the blinds, when lo! not a drop is falling. It is the wind in my Maple trees. I had thought of that, and listened with the most discriminating attention, and was sure that it was rain. Twice we lived in houses built on the edge of the original forests. These had been thinned out, and recesses opened up. It happened in both cases that an Ash and a Hickory had been left, which shot up, without side branches, to a great height. The trunks were supple and tough. Whenever the winds moved gently, these long and lithe trees moved with singular grace and beauty. As there was no perceptible wind along the ground, the movements seemed voluntary. And yet there was in it that kind of irresolution which one sees in sleep-walking. But as soon as the breath became a breeze, the wide circles through which these rooted gymnasts moved was wonderful. They seemed going forth in every direction, and yet surely and quickly springing back to position again. And in every motion, such was their elasticity, they manifested the utmost grace. The sighing of winds in a Pine forest has no parallel sound except upon the sea-shore. Of all sounds of leaves it is the sweetest and saddest, to certain moods of summer leisure. The Pine sings, like the poet, with no every-day voice, but in a tone apart from all common sounds. It has the power to change the associations, and to quicken the poetic sensibility, as no other singing tree can do. Everyone should have this old harper, like a seer or a priest among trees, about his dwelling. Under an old Pine would naturally be found the young maiden, whose new lover was far across the seas. In the sounds that would descend she could not fail to hear the voices of the sea,—the roar of winds, the plash of waves running in upon the shore. Every country place should have that very coquette among trees, the Aspen. It seems never to sleep. Its twinkling fingers are playing in the air at some arch fantasy almost without pause. If you sit at a window with a book, it will wink and blink, and beckon, and coax, till you cannot help speaking to it! That must be a still day that does not see the Aspen quiver! A single leaf sometimes will begin to wag, and not another on the whole tree will move. Sometimes a hidden breath will catch at a lower branch, then, shifting, will leave that still, while it shakes a topmost twig. Though the air may move so gently that your cheek does not feel it, this sensitive tree will seem all a-shiver, and turn its leaves upward with shuddering chill. It is the daintiest fairy of all the trees. One should have an Aspen on every side of his house, that no window should be without a chance to look upon it nods and becks, and to rejoice in its innocent witcheries. I have seen such fair sprites, too, in human form. But one does not get off so easily, if he sports too much with them. The Aspen leaf makes no wounds. Its frolics spin no silken threads which one cannot follow, and which will not break!

The musical qualities of trees have not been considered enough, in planting around our dwellings. The great-leaved Magnolias have no fine sound. Willows have but little. Cedars, Yew-trees, and Lombardy Poplars are almost silent. It is said that the Lombardy Poplar is the male tree, the female having never come over. It is very likely. It is stiff enough to be an old bachelor. It spreads out no side branches. Its top dies early. It casts a penurious shadow.

H. W. BEECHER.

THE HOUSEHOLD.

SCIENTIFIC TESTIMONY IN FAVOUR OF FRUIT AND VEGETABLE FOOD.

PROFESSOR OWEN.—“The apes and the monkeys, which man nearly resembles in his dentition, derive their staple food from fruits, grain, the kernels of nuts, and other forms in which the most sapid and nutritious tissues of the vegetable kingdom are elaborated; and the close resemblance between the quadrumanous and human dentition shows that man was, from the beginning, adapted to eat the fruit of the trees of the garden.”—“*Odontography*,” p. 471.

BARON CUVIER.—“The natural food of man, judging from his structure, appears to consist principally of the fruits, roots, and other succulent parts of vegetables.”—“*Animal Kingdom*,” p. 46 (Orr, London, 1840).

M. DAUBENTON.—“It is, then, highly probable that man in a state of pure nature, living in a confined society, and in a genial climate—where the earth required but little culture to produce its fruits—did subsist upon these, without seeking to prey on animals.”—“*Observations on Indigestion*.”

LINNEUS.—“This species of food [fruit] is that which is most suitable to man; which is evinced by the series of quadrupeds; analogy; wild men; apes; the structure of the mouth, of the stomach, and the hands.”—“*Linneæ Amoenitates Academicæ*,” vol. x., p. 8.

RAY.—“Certainly man by nature was never made to be a carnivorous animal, nor is he armed at all for prey or rapine, with jagged and pointed teeth, and crooked claws sharpened to rend and tear; but with gentle hands to gather fruit and vegetables, and with teeth to chew and eat them.”—“*Evelyn's Acetaria*,” p. 170.

BELL.—“It is, I think, not going too far to say, that every fact connected with the human organisation goes to prove that man was originally formed a frugivorous animal. . . . This opinion is principally derived from the formation of his teeth and digestive organs, as well as from the character of his skin; and the general structure of his limbs.”—“*Anatomy, Physiology, and Diseases of the Teeth*.”

HALLER.—“This food, then, which I have hitherto described, and in which flesh has no part, is salutary; inasmuch that it fully nourishes a man, protracts life to an advanced period, and prevents or cures such disorders as are attributable to the acrimony or grossness of the blood.”—“*Elements of Physiology*,” vol. vi., p. 199.

HUFELAND.—“The more man follows Nature, and is obedient to her laws, the longer will he live; the further he deviates from these, the shorter will be his existence. . . . Plain, simple food only, promotes moderation and longevity; while compounded and luxurious food shortens life. . . . Instances of the greatest longevity are to be found among men who, from their youth, lived principally on vegetables, and who, perhaps, never tasted flesh.”

LIEBIG.—“Grain, and other nutritious vegetables, yield us, not only in starch, sugar, and gum, the carbon which protects our organs from the action of oxygen, and produces in the organism the heat which is essential to life, but also in the form of vegetable fibrine, albumen, and caseine, [the elements of] our blood, from which the other parts of our body are developed. Vegetables produce, in their organism, the blood [matter] of all animals; for the carnivora, in consuming the blood and flesh of the graminivora, consume, strictly speaking, only the vegetable principles which have served for the nutrition of the latter.”

DR. CARPENTEE.—“We freely concede to the advocates of vegetarianism that, as regards the endurance of physical labour, there is ample proof of the capacity of what is commonly called the vegetable regimen, that is, abstinence from flesh meat, to afford the requisite sustenance. . . . We are inclined, then, to believe that a purely vegetable diet, if it contains a due proportion of oleaginous matter, is capable of maintaining the physical powers of the body at their highest natural elevation, even under the exposure of the extreme of cold,” &c.

DR. CULLEN.—“I am firmly persuaded that any man who, early in life, will enter upon the constant practice of bodily labour and of abstinence from animal food, will be preserved entirely from gout. . . . The cure [of rheumatism] requires, in the first place, an antiphlogistic regimen; and particularly a total abstinence from animal food, and from all fermented and spirituous liquors.”

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

It is hardly necessary to say that the present season, on account of its great drought, has been by no means favourable for the flower garden. The rainfall has been exceedingly partial as well as deficient; and many instances have occurred where, in certain localities, considerable falls of rain have been experienced; while in others, removed by a distance of only a mile or two, no fall has taken place. It may give an idea of the drought experienced in this part of the country to know that the rainfall of the first seven months of the present year amounts to only 6·64 inches. The season, however, has afforded ample opportunities to judge of the great advantages to be derived from an extra depth of soil, and also of a system of mulching wherever this is practicable, as, in too many instances, watering without this really avails but little. Notwithstanding the arid and ungenial character of the season, some varieties of bedding plants are succeeding even better than could have been expected, and notable among which are the Ivy-leaved and hybrid Ivy-leaved Pelargoniums, reference to which was made in a former calendar; while the failure of the yellow bedding *Calceolaria* in many localities is a circumstance, however much it may be regretted, unlikely to cause much surprise; indeed, the total exclusion of this plant from the parterre has almost become a settled question with many cultivators, and is only postponed from year to year on account of the difficulty of finding a suitable substitute, or one likely to supply the desired colour. Many varieties of annuals and other plants have been recommended for this purpose, but none of them free from grave objections; among the best are *Tagetes signata*, and some of the various sorts of dwarf French Marigolds, the *Gaillardias*, *Calliopsis*, or *Enothera Drummondii*, all of which have, however, a more or less weedy appearance, and in all respects fall far short of the *Calceolaria*, when seen in a flourishing condition; but, in the meantime, a fair trial might be given to the varieties of yellow bedding Pansies, *Tropeolum compactum*, and some of the orange and yellow-flowering Lantanas. Though the flower-garden may be less attractive than it usually is at this season, the various routine operations must nevertheless be adhered to, and every effort should be made to make neatness and order compensate, as far as possible, for any deficiencies which there may be in floral display. Go over flower-beds daily, or as frequently as may be necessary, and pick off decayed flowers and leaves. Finish the clipping of Box and other edgings, if this is not already done, and sweep and roll Grass belts and gravel walks as often as is found necessary. Push on the propagation of bedding plants as fast as possible, wherever cuttings can be obtained. Put in cuttings also of various sorts of hardy herbaceous plants, wherever it may be considered necessary to increase the stock of the same—such as the various hybrid Phloxes (all of which are exceedingly beautiful), Pentstemons, and Mule Pinks, all of which may now be struck from cuttings in a close frame, along with Verbenas and other bedding plants; and they may be wintered in the store pots, from which they can be transferred to beds or borders where they are intended to flower, in spring, or, to further forward them, they may be potted off singly in spring, and planted out about the beginning of May. Collections of valuable hybrid Phloxes, Pentstemons, Delphiniums, and Mule Pinks, should be cultivated in every garden, as they are all beautiful decorative plants, and always afford an abundant supply of cut flowers during a very considerable portion of the season; and the improvement which has been effected in them of late years is very remarkable.—P. GRIEVE.

Roses.

Maréchal Niel is the finest yellow Rose we have in cultivation, but being a free grower and bad one to flower in some localities, and having grown it in pots and out of doors on its own roots, Briar, Gloire de Dijon, and other stocks, a few remarks as to the best way, and the stocks I have flowered it on most successfully, may be useful to amateurs wishing to grow this fine Rose; I will, therefore, commence by taking the Maréchal on his own roots. I have a Rose-house, with the spans facing north and south, with a pit for fermenting materials, and bottom-heated by hot-water pipes. The paths and stages all round are 2 feet 6 inches wide. I took off a cutting from one of the grafted plants, which, when rooted, it was potted into a large 60-pot, in March, 1873, and then plunged in Cocoa fibre in the Rose-house and grown on up to the middle of July, during which period it received several shifts, and at the end of July I gave it its last shift for the season. By this time the plant had two shoots 6 feet long. I had the pot placed near a south fence, and the shoots nailed to the fence, in which position it remained

till the beginning of November, receiving an occasional watering. It was then removed, with other Tea Roses, into cold pits. At the latter end of January, 1874, I had it removed to the Rose-house, and placed the pot on the south stage of the house, as near the front-lights as I could place it. I then had two lines stretched horizontally, about 1 foot apart, along the front rafters, to which I tied the two shoots, without pruning them; but previous to doing so, I had the Roses washed with a solution of weak Gishurst compound. From that plant I have cut over one hundred fine blooms this season. It commenced flowering in March, and has had three or four successions of blooms up to the end of July, all of the blooms being fit to exhibit at any exhibition of Roses. (The *Maréchal* does not succeed so well on its own roots planted out, as in pots.) I also had two plants, started in the spring of 1873, specially picked out, and worked on the Briar stock; one was budded, and the other was grafted on the French system; they both made excellent growth; the grafted plant seemed to do the best for some time, but when removed from the house to the open air, by some means or other, the graft was broken off, so I am quite certain the grafts do not succeed for such strong Roses, except they are potted deep. The budded plant made excellent growth, and it was quite as good as the plant on its own roots, and one thing I must mention, that the Roses that were cut off the Briar were of a deeper colour. The Rose was trained on front wires in the same way as the one on its own roots, and received the same treatment. *Maréchal Niel* succeeds well planted out worked on the Briar, but I do not like grafted plants. I bought twelve grafted plants, and not one is alive now. Standards especially, bloom freely, and are very deeply coloured. I have dwarf ones worked for trellis-work. Care ought to be taken in selecting good healthy stocks, and do not prune too freely, only cut out weak shoots, leaving the strong growth to flower.—H. G.

Indoor Plant Department.

To soft-wooded conservatory plants in flower, pure water only should be given; but to such as are making growth, occasional applications of manure-water may be given. *Lapagerias*, both red and white, are now in great beauty, as are also *Passion-flowers* and *Fuchsias* on trellises. *Lilies* placed amongst the green masses of *Camellias*, *Azaleas*, *Acacias*, &c., have a pleasing effect, and few plants can be more charming for fronts of borders than *Hydrangea paniculata*, *Agapanthus umbellatus*, *Vallota purpurea*, *Trachelium cæruleum*, and *Plumbago capensis*. Keep up a good succession of *Gomphrena globosa*, *Balsams*, *Cockscombs* and other *Celosias*, *Rhodanthe Manglesii*, *Begonias*, *Petunias*, *Heliotropes*, *Achimenes*, *Fuchsias*, *Pelargoniums*, *Asters*, *Schizanthuses*, *Zinnias*, *Coleuses*, and others. Remove plants, the beauty of which is over, to frames; in the case of tall straggling plants, however, it may be more desirable to save cuttings of them than to preserve the old plants through the winter. Annuals may be consigned to the rubbish-heap as soon as their flowers become faded, unless seed-saving is an object. See to repairs in the way of glazing and painting, and put everything in good order before winter sets in. The general stock of hard-wooded plants in greenhouses, such as *Coronillas*, *Cytisuses*, *Heaths*, and *Azaleas*, must be freely exposed, if in frames, to atmospheric influences, but if out of doors they should be screened from strong sunshine by plunging the pots in Cocoa-nut fibre or ashes, and by laying the pots on their sides in the event of heavy rain-falls. The earliest started *Fuchsias* if now cut back, rested, re-potted, and started into growth, make fine late-blooming plants, but young plants are preferable. Transfer a few *Lilies* to a house with a north and cold aspect, so as to keep them as late as possible in coming into bloom. The earliest ones should now be kept quite dry and in a cool shady place, and succession ones just moist enough to prevent the leaves from shrivelling until the stalks turn yellow, when the bulbs may be kept altogether dry. Of *Amarantuses* have a good stock, as they are very effective mixed amongst flowering or white-leaved foliage plants, such as *Centaureas*. *A. salicifolius* will now be at its best, and in order to maintain a good brilliant colour in the leaves, keep the plants near the glass and in an airy position; a little peat put into the soil in which they are growing serves to increase brilliancy of colour in *Amarantuses*, *Coleuses*, *Iresines*, *Alternantheras*, and similar plants. Be very careful in watering plants of *Gomphrena globosa*; for they are apt to damp off quite suddenly at the neck, and to become useless; a little charcoal dust placed around the base of the stem has been found to be a good preventive of this malady. Permit the earliest started hybrid *Begonias* to go gradually to rest, for although they might continue to flower for a short time, yet their habit would be of such a loose and straggling character that young plants would be vastly superior to them. Sow *Cyclamens* in a very gentle temperature and light soil, for, by sowing now, excellent flowering plants will be obtained when the seedlings are fifteen months old. Attend to the pricking off and potting of *Calceolarias*, *Cinerarias*, and Chinese *Primulas*, and pot *Auriculas* and

place them in a frame with a northern aspect. Graft a few *Epiphyllums* on *Pereskia* stocks, and propagate a few of the latter by means of cuttings. Unfasten the ligatures of *Camellias* and *Azaleas* that have "taken," and re-pot the plants as soon as practicable. In stoves fine foliage is now more predominant than flowers, therefore the plants should be arranged accordingly, giving a light and prominent position to highly-coloured plants. Syringe every fine day, water plentifully but moderately, and shade thinly from strong sunshine. Pot singly young *Gloxinias* raised from cuttings made of the leaves, or seedlings, and gradually dry off those that have done blooming. Such plants of *Achimenes* as are exhausted place on a dry shelf, and keep them pretty dry. Some *Eranthemums*, *Gymnos-tachyums*, *Sonerilas*, *Cyrtodeiras*, *Bertolonias*, &c., if rooted at their several joints, may be separated, and each division to which roots are attached, potted singly. *Euphorbia jacquiniæiflora* and *Poinsettia pulcherrima* should have a position close to the glass in a moderately warm place. Encourage the growth of *Gesneras* of the *Exoniensis* section; they make fine blooming and ornamental plants from October throughout the winter. Plants of *Clerodendrons* of the *Kæmpferi* and *Fallax* section must be stored away in some dry place.

Orchids.

Most of the work now to be done in the Orchid-house consists in keeping plants, pots, and stages scrupulously clean and sweet. Watering will require more care and attention as the dull foggy weather commences, especially such pseudo-bulbous kinds as have completed their season's growth. Others, as *Vandas*, *Aërides*, *Angraecums*, *Phalenopsis*, and *Cypripediums*, will always require a liberal supply, even during the depth of winter, and the last-named, together with *Disas*, and such of the *Dendrobies* as are making their growth, should be gently dewed with the syringe in the middle of the day during bright mild weather. *Lælias*, on blocks, and *Sophranitis* will now require constant attention, and must be repeatedly plunged or dipped in tepid water, so as to thoroughly moisten the *Sphagnum*, which will then continue in a genial state, and foster the increase of root-growth and the consequent vigour of the plants. Carefully renew the top growth of *Sphagnum* in all cases where it has failed since the general re-potting took place. The Moss used for this purpose should be carefully picked over, bit by bit, so as to remove all rubbish, insect pests, and slugs. Where *Cattleyas* have made their growth, every precaution should be adopted to prevent their again starting into growth before the turn of the year. This may be done by keeping them moderately cool and dry at the roots, and by admitting plenty of fresh air daily during fine weather. The bottom ventilators may be left open during mild nights, and this treatment conduces to produce a fresh and healthful appearance among the plants that cannot be attained in any other way.—F. W. BURRIDGE.

Indoor Fruit Department.

As soon as *Pines* are cut in any of the pits, get the latter thoroughly washed, cleaned, and repaired, the wood-work painted, and the walls lime-washed. The heating apparatus should likewise be seen to, and all got into good working order. Remove such suckers as are good and strong as soon as they are ready for separation, with a heel of the old wood attached to them if practicable; pot them at once, and start them in a kindly temperature. Crowns, as a rule, should be avoided unless for the perpetuation of new or scarce sorts, and then only those from first-class fruits ought to be chosen. No matter at what season suckers are ready, they should be potted. Shift all plants that require it, shade them and keep them a little close for a time, and dew them overhead with tepid water through a fine rose or syringe at shutting-up time. Those intended for early summer fruiting should now have their pots well filled with roots, and should be kept moderately dry, but at no season of the year absolutely so. Such plants as are about to throw up their fruits enjoy a good growing temperature and a kindly bottom-heat, and for this purpose fresh linings and plunging may be necessary. Remove the lights if practicable from the earliest *Vineries* in which all the wood is thoroughly well ripened and the fruit cut, and paint and repair the house. Where *Grapes* are ripe and hanging, precautions should be taken against the ravages of wasps and other depredators, either by placing the clusters in little muslin bags, or if convenient, covering over all openings for ventilation with sheets of tiffany, hexagon netting, or frigi domo. A somewhat dry atmosphere is necessary where *Grapes* are ripe and colouring, but still guard against too much aridity. In late *Vineries* where the berries are swelling, give air night and day, and maintain an equable temperature by means of a little fire-heat, which dispels stagnant damp in dull weather, and renders the atmosphere sweet and healthy; give also abundance of water, and sometimes manure-water, to the borders, and liberally damp all paths, walls, and floors during the day, otherwise shrivelling soon sets in, and red spider

makes its appearance. The earliest pot Vines will now have their canes well browned off and thoroughly matured, and as soon as this is the case they may be turned out of doors and set in well sheltered places where their rods can be kept erect. Turn the pots on their sides when it rains heavily. Other pot Vines may be kept in a growing condition until they are ripe, when they should be treated like the earliest ones. In order to give late Peaches and Nectarines every chance of ripening properly, fully expose them to the influence of the sun. Trim out all shoots not required for next year's work, so as to thoroughly ripen those retained. Where the fruit has been gathered, and the wood is well matured, ventilate the houses as much as possible night and day, and syringe with a solution of sulphur for the eradication of red spider, and use some dissolved soft-soap or Gishurst compound in the water when syringing for the destruction of scale. Keep the borders moderately moist, for drought under any circumstances is exceedingly deleterious to the trees. The second general crop of Figs will now be ripening, and consequently the atmosphere should be kept a little drier than usual, and the house more freely ventilated so as to improve the quality of the Figs. Trees swelling their fruits must be liberally fed and syringed, and scale and other vermin eradicated. Prevent over-luxuriance in Melons by means of kindly treatment and a little ventilation at night as well as during the day, in preference to stinting the supply of moisture and pinching severely. However, their growth must be regulated and held in check, and attention must be paid to the fertilisation of the blooms. To those whose fruits are swelling, give heavy applications of water, and occasionally some manure-water. If the plants for winter fruiting are not yet planted, no time should be lost, for late-planted ones seldom give much satisfaction. Seed of Cucumber plants for winter fruiting should now be sown, and cuttings struck from present fruiters to succeed them. Worn out plants may now be cut in rather severely, the borders mulched and well watered, and the linings renewed; the plants will then soon make a fresh start, and bear well for some time. Attend to the usual routine of thinning the leaves, shoots, and fruits whilst in a young state.

Hardy Fruit.

Each day now the sun begins to lose power, and we have only a few more weeks left of sunshine of sufficient force to mature the wood of our fruit trees. This fact should now govern all our practice in the fruit garden. Each superfluous shoot, in the case of wall trees, should now be removed; for, where the wood is laid in at all thickly, and the leaves are well developed, it is nearly all densely shaded. It continues green instead of brown; now green wood means weak wood, with great buds and an excess of sap in them. The two together are capital food for the frost, and many a deep cut have I seen it make in such wood, producing running gum and cankered blotches innumerable. The best means of steering clear of such evils, and others that are pretty sure to come, with the winter's cold and the erratic freaks of spring, is to see that the wood of all fruit trees is thoroughly and soundly ripened in the autumn. Ripe wood is well-nigh invulnerable to cold; its buds have gone safely to sleep, and they have thick, warm, hard nightcaps, in which they repose in safety. But green wood and watery buds are altogether different; they have hardly gone to rest, when the spring flow of the sap begins to rise, and this early rising means sure destruction. That the early bird gathers the worms, is not more true than that early trees are blighted by frost. The fact is, those least matured in autumn are the first to move in spring, and the tenderest during winter. The fruits will mostly ripen without much of our help, but it is different with the wood. Even the colour and flavour of late Peaches, Plums, and Pears are often much improved by the removal of superfluous branches. The wood is still more benefited. Occasionally strong growing fruit trees should be partially root-pruned this month. Nothing hastens maturity like the knife on a few leading roots; but such early root-pruning must not be carried to excess. If so, we would reap a harvest of shrivelled wood buds, and few fruit-bearing ones. A full crop of fruit I always look upon as the most satisfactory and effective wood ripener.—D. T. FISH.

The Kitchen Garden.

Cucumbers in pits or frames, that are expected to continue in a bearing condition till the end of October, should have the linings partially renewed to stimulate root action; and, as the nights will soon be getting colder, mats should be resorted to to prevent radiation. Any plants that are showing symptoms of exhaustion should be top-dressed with rich soil, and be occasionally watered with liquid-manure, sprinkling them freely with clear soft water on the afternoons of fine days, and shutting up early. Where autumn and winter Cucumbers are in large demand, the first house should soon be planted. By planting early there is no occasion to push the plants

unduly with fire-heat, and they will attain to a strength and firmness of growth that will stand them in good stead when the short dark days come. The best form of house for the growth of winter Cucumbers is a low span-roofed structure running east and west; the sides of the span should be of unequal width, the widest facing the south, whilst the north side need not be more than 4 or 5 feet wide. This kind of house for winter work possesses many of the advantages of the lean-to, with abundance of light, and does not require so much fuel as the full-sized equal span-roof. There are one or two points on the heating of such houses, that I think ought to be briefly noticed and insisted upon. The first is—it is false economy to stint the number of pipes, the number of which of course must depend upon the size of the house. When hot-water pipes become very hot, a dry scorching heat is given off, that acts injuriously upon soft-leaved plants like Cucumbers, therefore, with a liberal allowance of piping, there will be less necessity to force the apparatus in cold weather, in order to maintain the requisite temperature. Another thing that is often forgotten at the time when the pipes are fixed, is having separate valves to regulate the bottom heat, so as to have it under thorough control; I look upon this as an important matter, for an excess of bottom heat has been the cause of many failures. The question as to the best soil for winter Cucumbers, has often been discussed, with the usual variations of opinion. I have at various times used almost all kinds of soil obtainable, but there is nothing better than good turfy loam that has been laid up in a heap eight or ten months, in which layers of stable or cow-shed manure had alternated with layers of turf. This can be obtained on most estates; and I think it is most unwise to go to a great expense to build houses for winter forcing, and then deny a man the few loads of soil requisite for successfully carrying it out. Whatever soil is used, let it be free from wireworms; and a sprinkling of soot will be useful, both for expelling insects and imparting vigour to the plants. Cardoons are not so much grown as they were twenty years ago; perhaps they occupy too much space to be profitably grown in small gardens. In large places, however, where first-class French cookery is appreciated, they will be in demand. There seems to be arising a demand for novelties in vegetables as well as in flowers; therefore, I think Cardoons should have more attention bestowed on them, so as to anticipate the probable requirements of the kitchen. The first lot will soon require earthing up, having first gathered the leaves together and bound them round with hay or straw-bands; hay is generally used, because it lies close. The whole row is then earthed up, packing the earth in firmly in the same way in which Celery is usually done.—E. HOBDAV.

Cottagers' Gardens.

Where Potatoes are making a second growth, no time should be lost in lifting them, as they would, if allowed to remain, soon be rendered worthless. The ground, if dug up directly, will be in good condition for the earliest Cabbage crop, the latest sowing of which may now be made. All hedges should be clipped, and ditches thoroughly cleansed while they are so dry; all will then be in readiness for autumnal rains. Attention must still be given to watering many crops, as the slight showers we have had are very deceptive, and while the surface looks moist the roots may be suffering from drought. Any fruit trees that are heavily cropped will be greatly benefited by a good root watering. Window plants must be kept clear of decaying flowers and foliage, and some stimulant applied in a liquid state to continue the blooming period as long as possible. Leaves are falling early this year, and extra attention will be required to utilise these as manure, and to keep everything neat and tidy.—J. G.

Progress of the New Potato Pest.—Colorado beetles (*Doryphora decem-lineata*) are working eastward. They were quite severe in Wayne, New York, but were comparatively harmless in Wyoming. In Alleghany they were strenuously resisted with Paris-green; they were also noted in Cattaraugus, Delaware, Madison, and Tioga. They were also operating in Burlington, New Jersey. In Butler, Pennsylvania, Paris-green is pronounced a failure; resort was there had to patent preparations, but the most effective method of resistance was to shake the bugs into a box and dispatch them. In Union, Paris-green and lime were also effective. In Adams and several other counties the virtues of Paris-green were utilised by a persistent and intelligent application. In Dauphin and Forest Counties the insects appeared to be departing, leaving no great damage behind them, especially upon late plantings. The Department of Agriculture has numerous reports recording the progress of the insect towards the Atlantic. In some counties it appears to be checked by other insects. Great good appears to have come from the prompt and energetic application of Paris-green and other

remedies. The plan of having a paid state entomologist, adopted by some of the American States, and the prompt information as to the enemy's movements, and the best modes of fighting him, supplied by the excellent American agricultural press, have been of great use in this case. The best remedy that can be recommended is pure Paris-green, mixed with ashes or flour, in the proportion of one part to twelve or fifteen. It should be dusted over the plants in the morning when the dew is on the foliage, and should always be repeated after rains. Three pounds of Paris-green to about 40 pounds of flour, ashes, or air-slaked lime, will answer for an acre of Potatoes.

More London Improvements.—We are glad to learn that the Duke of Northumberland, in consideration of the large sum generously paid to him, without a proper valuation, for his old palace in the Strand, has decided to follow the example of Baron Grant, and transform Trafalgar Square from its present stoney wilderness into a blooming garden. According to the plan submitted for our inspection, Landseer's lions will be surrounded with beds of green and protected by dwarf-railings. Now it is the Duke of Bedford's turn; for such public spirit ought to be infectious.—*Hornet*.

Not a Gardener's Paradise.—A cultivator in the Western United States can hardly be having a sweetly pastoral life of it. A newspaper there sketches his daily troubles:—"At daylight he investigates his corn-hills for cut-worms. Then he gets up an appetite for his breakfast by crushing codling-moth larvæ with a hoe-handle. During the forenoon he indulges the Potato-bugs with a solution of Paris green. His post-prandial pleasure is to scald the chinch-bugs. His evening delight is to smudge Peach trees to keep down the curculio. When he wakes to another day of toil, he hears fresh grasshoppers tinkling against the pane."

Middlesex Plants.—Numerous specimens of *Sedum dasyphyllum*, I am informed by Mr. W. G. Smith, have been sent him from Mr. J. T. Clarke, who writes that it grows on very old walls for about a mile round Hillingdon. There can be little doubt that it is planted there. Since the publication of the "*Flora of Middlesex*" this *Sedum* has also been found in abundance on the left hand wall of Sion Lane, Isleworth.—The Rev. Dr. Hind sends Mr. Trimen, editor of *The Journal of Botany*, specimens of *Pyrola minor* from the Grove, on the east side of Stanmore Heath. It occurs in considerable quantity, covering several square yards, under some venerable trees. He states that there appears to be no reason to suppose it introduced.

Remedies for Stings.—Among the various cures recommended for bee stings are liquid potassæ, olive oil, vitriol, laudanum, vinegar, honey, salaratus and water, salt and water, soft soap and salt, raw Onion, tobacco juice, a paste of clay or flour, the expressed juice of any green leaf, or of the ripe berries of the coral Honeysuckle. As animal poisons decoxydize the blood, their antidotes will be anything that contain much oxygen. The poison of a bee being acid, an alkali must be employed to neutralise it. If, therefore, we were selecting for trial any of the above so-called remedies, we should choose either soft soap or ammonia. But if the individual stung is not very nervous, cold water applied to the wound will be quite sufficient, and it should not be rubbed. One great essential is, if heated, to get cooled as soon as possible, and to avoid becoming heated again for at least two days. Nothing is so apt to make the poison active as heat, and nothing favours its activity less than cold. Let the body be kept cool and at rest, and the activity of the poison will be reduced to a minimum. Any active exertion, whereby the circulation is quickened, will increase both pain and swelling.

Toads in the Garden.—Many persons have a loathing of this really interesting, but certainly not handsome, Bufo, the result of superstition or want of education. It is time we learned that they cannot bite, and if they could, that bite would be harmless. We suppose the fiction that they carry a jewel in their head is no longer believed, Shakespeare to the contrary notwithstanding; yet the latter is more true than the former—indeed, it is half true. They carry two; their eyes, at least, are as bright as any jewels that ever sparkled in a diadem. They are the most innocent of creatures that ever ate indiscriminately anything that had life that they could swallow that came within reach. They are worth more per head to the horticulturist than chickens, even allowing that chickens did not scratch; and, to put our readers thoroughly in good humour, with these insect-devourers, we reproduce the following story by Dr. Harris:—He supposed the odour of the squash bug (*Coreus tristis*) would protect it from the toad; and, to test the matter, he offered one to a grave-looking Bufo, under a Cabbage. He seized it eagerly, but spit it out instantly, reared up on his hind legs and put his front feet on top of his head for an instant as if in pain, and then disappeared across the garden in a series of the greatest leaps a toad ever made. Perhaps the bug bit the biter. Not satisfied with this Dr.

Harris hunted up another toad which lived under the piazza, and always sunned himself in one place in the Grass, and offered him a squash bug, which he took and swallowed, winking in a very satisfied manner. Twenty other fine bugs followed the first in a few moments, with no difficulty or hesitation in the taking or swallowing, though, from the wriggling and contortions, it appeared their corners did not fit well within.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

AUGUST 19TH.

ONE of the most curious plants brought before the floral committee on this occasion was *Decabelone elegans*, sent by Mr. J. T. Peacock, and splendid cut specimens of the gorgeous crimson-lipped *Cattleya Dowiana* came from Mr. Brockett's collection at Muswell Hill. A fine new seedling black Grape, having large well shouldered clusters, and oblong berries of a distinct Muscat flavour, came from Mr. Sweeting, gardener at Sneyd Park, near Bristol. Mr. James Groom, of Henham Hall Gardens, Suffolk, exhibited a large oblong Melon a foot and a half long by about half as much in diameter. It is of a rich deep yellow colour with white flesh. Notwithstanding its coarse appearance, it was found to be of excellent flavour, and is interesting as having been raised from seeds brought home from Africa by Sir Samuel Baker, the well known explorer.

Miscellaneous.—Mr. W. Bull sent *Weigela Lavallei*, a new kind with dark rosy flowers; Mr. Chambers, of the Westlake Nurseries, sent finely-flowered plants of the bright blue double-flowered *Lobelia pumila grandiflora*, to which we have before alluded as excellent for carpet bedding and pot culture. With these came the Californian annual *Diplacus californicus*, with orange or orange-yellow flowers, and specimens of a dwarf-growing variety of the well-known Artillery plant (*Pilea muscosa*); Mr. J. Croucher brought *Aloe Fraskii*, having thick amplexicaul leaves; Messrs. Rollison & Sons, of Tooting, sent a splendid group of cut herbaceous Phloxes, the colours being very clear and distinct, and these were much admired; Mr. J. Blackwood, gardener to W. Collinson, Esq., sent *Bonatea speciosa*, an old terrestrial Orchid from the Cape, having green and white flowers in terminal spikes. This plant is remarkable on account of the peculiar arrangement of the pollen masses, which are borne on long stalks similar to those of the large-flowered *Disa*. It is sometimes known as *Habenaria Sandersonii*, and may be seen at Kew. Mr. R. Dean, of Ealing, sent a large white-flowered Phlox, named Miss Robertson; and Messrs. Hender & Son, of Plymouth, sent an excellent strain of variegated *Amarantus*, having very brilliantly coloured foliage, the most distinct colours being rich orange, purplish-crimson, and creamy-yellow. Messrs. George Paul & Sons, of the Old Nurseries, Cheshunt, sent some nice stands of choice cut Roses, the blooms being of excellent quality for the season of the year.

Fruit.—Messrs. Lane & Sons, Berkhamstead, sent a seedling Grape of excellent quality; but not quite ripe; the committee, therefore, deferred judgment until it can be shown in better condition. From Messrs. Dobson and Sons, Isleworth, came a brace of white-spined Cucumbers, named Prince of Wales; and Mr. Chambers, also of Isleworth, sent a seedling variety, named Westlake Rival; but neither were considered sufficiently in advance of existing kinds to merit an award. Mr. Brown, gardener to Earl Howe, Gopsall Hall, sent some nice fruit gathered from trees which had been removed last season; and Mr. F. Dancer, of Chiswick, the eminent fruit grower, brought excellent specimens of the *Souvenir du Congrès Pear*. A new Scarlet-runner Bean came from Mr. A. Henderson, of Shrublands; but it was not thought distinct from other varieties.

First-class Certificates were awarded to the following plants:—

Cheilanthes Bergiana (Blackwood).—An elegant Fern, from the Cape of Good Hope. Well worth culture.

Cerasus Mahaleb pendula (G. Paul).—A striking variety of a well-known ornamental flowering tree, remarkable as having an elegant drooping habit.

Cornus alba marginata (G. Paul).—A pretty shrub of moderate growth, chiefly remarkable for the white marginal leaves. A nice addition to variegated deciduous shrubs.

Black Muscat Grape "Sneyd Seedling" (Sweeting).—A new and desirable variety, having large and well shouldered clusters of oblong berries, the flesh being tender, juicy, and of a very rich Muscat flavour.

Hollyhock, Mulberry Gem (W. Chater).—A stout dense spike of deep rich blackish-purple flowers.

Hollyhock, Rose Supreme (W. Chater).—A fine dense bright rosy flower, and a nice addition to these stately plants.

A Botanical Certificate was awarded to Mr. J. Croucher, gardener to J. T. Peacock, Esq., for the curious *Stapelia*-like *Decabelone elegans*, having spinose erect angular stems of a glaucous green colour, and drooping longish bell-shaped flowers of a greenish-yellow colour, profusely dotted and streaked with reddish-purple. It is well figured in the last number of the *Botanical Magazine*, t. 6155.

The Gardeners' Royal Benevolent Institution.—With reference to the articles recently published concerning this institution, a correspondent, who agrees with the inadequacy of the support, nevertheless, considers the payment of a guinea a year to the institution as good an investment as a gardener can make, inasmuch as the payment of this for sixteen years secures his election.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

FLOWER-GARDENING IN HYDE PARK.

By AN ARTIST.

HAVING, in a recent number of THE GARDEN, read with much interest the remarks of "An Amateur" on the flower-gardening in Hyde Park and Kensington Gardens, "An Artist" ventures to communicate a few remarks on points not touched upon by "An Amateur," and on some others on which his views slightly differ. On entering Kensington Gardens, and passing the northern end of the Serpentine a welcome improvement in the treatment of the bare ground in front of some of the shrubberies is at once observable. The bareness has been partially clothed with flowers and leafage by means of a copious scattering of mixed seed of the more popular annuals. Enough has been done to show that a thick sowing of mixed annuals along the front of irregular shrubberies will prove itself a successful innovation, as heightening the effect of such plantations without the drawback of a certain amount of formalism which necessarily accompanies the old system of distinct patches of herbaceous plants introduced at regular, or nearly regular, distances from each other; or, the still more objectionable system of "ribbon" bordering. On approaching "the cottage," with its rich and pleasing effect, so justly noticed by "An Amateur," it becomes a question, to one with an eye specially educated in art matters, to ascertain what are the principles which produce the undeniably pleasing effect of the whole; and the result of artistic reasoning was this—that the success did not depend nearly so much upon the extremely perfect production of the pretty geometric mosaic of flowers, in set patterns, as upon the occasional introduction, here and there, without formality, of naturally graceful plants—and to the interruption of the architectural lines of the mass of plants rising high above the window sills, and the partial (not complete) covering of the building with Ivy, each of which features tend to break up gracefully the formality of the geometric system, but above all, it is the situation of this little oasis of brilliant flower-colour, in the midst of a wide expanse of undulating turf, and its embowered site, beneath clusters of great trees (which are among the finest in the gardens), that make it a highly-coloured spot, in the midst of the soft repose of far-spreading green, so universally attractive. On approaching the so-called rock-work, at the southern extremity of the Serpentine, one cannot but feel that our "Amateur" has been somewhat too tender in his otherwise just criticism. The "rock-work" is, indeed, only tolerable where entirely covered; the brick-end and clinker work being lumped together, with unmeaning ups and downs, in that truest type of Cockneyism which is so odious to artistic eyes. The interstices of this "ingenious" piece of work were originally filled with expensive plants, utterly unsuited to the situation, which must, in the aggregate, have cost a large sum of money; and which, after making a very brief display, soon died out, as a matter of course. Their places have been usurped by a few rank-growing things, such as the wild hedge Clematis, stunted Periwinkle, and other things of the kind, assisted by mere weeds, which, however, perform the useful office of partially covering the ugly nakedness of the clinker heap. The irregularity of surface produced by the brick-ends being effected, it ought to be taken advantage of for the display of such sorts of hardy plants as are suited to that kind of situation; and, with the better taste that is beginning to prevail in the decorative treatment of the Park, a great improvement in the aspect of the *soi-disant* rock-work may perhaps be expected. There is a long and important strip of gardening not far from the odious rock-work, which has been raised sufficiently high to conceal the most offensive portion of the backs of a row of mean houses in Knightsbridge; an addition which is certainly a vast improvement upon the former appearance of that portion of the park. Some of the slopes of this piece of raised land are very well managed, and produce a very pleasing effect; but, in several places, a kind of blemish occurs, which is but

too common in works of that kind. The defect alluded to, consists in the fabrication of mere hammocks by way of variety, which have generally somewhat the form of gigantic mole-hills; and, as though to make the unnaturalness of this tasteless device more palpable and call it into notice, there is, in almost every instance, a plant of some kind or other stuck on the apex, like a sprig of Holly in a Christmas pudding. The effect of this is sometimes ridiculous, and the nuisance ought to be abated as soon as possible, by reducing these turf puddings to gentle and natural undulations. Another defect is the spottiness with which the more conspicuous plants are introduced. One or two kinds of Banana, for instance, have been planted out for the summer with very good effect, as giving a semi-tropical aspect to some of the shrubby plantations; but the otherwise successful attempt is marred by dotting these noble plants about in all directions, at about equal distances. Sir Fretful Plagiary, in "The Critic," is represented as introducing the boom of the "evening gun" at a special crisis of his drama, but to his horror, the manager, thinking the effect exceedingly good, determined to have half a dozen evening guns, one after another. "Give them a good thing," said Sir Fretful, "and they run it to death;" and so it is with the Bananas, Palms, &c. Varied groups, or even single plants, in suitable companionship, would have been exceedingly successful, but they are sadly overdone, like the booms of the evening gun. No one can look at the slopes of turf in question, spotted all over with nearly equi-distant shrubs, as thick as plums in a pudding, without longing for some clear spaces of turf, to give repose, and something like the aspect of tasteful design. Another defect, from an artistic point of view, is the bordering of irregular shrubberies with set ribbon lines of flowers, in one, two, or three formal stripes of colour—the glaring border entirely destroying the repose and grace of the shrubs, which are, as it were, tied up in this tawdry cable. If we must have ribbon-borders, the fringe of an irregular shrubbery is not the place for them. The lines of Gnaphalium look bad in the same positions. The forms of the detached flower-beds, again, are often ridiculously bad. The kidney-shape appears to be a great favourite, and so does the heart-shape, and also the crescent-shape; all of which, by abundant repetition, fatigue the eye, and call undue attention to this kind of torturing of flower-bed forms, which ought, on the contrary, to be as simple as possible, when not forming part of a set design of geometric character. Detached beds should always be simple in form, in order that the hardness of their outline may not be brought into unnecessary prominence. The circle is the best of all forms for this purpose, and next comes the oval. So far from seeking to occupy the eye with the flowers themselves rather than by the shape of the compartment in which they are planted, the shape itself seems to have been the chief object of the designer of some of these flower patches. The best shapes for flower-beds are those so simple in outline that the attention is not attracted by the shape at all, but reserved wholly for the flowers and plants. Very objectionable features are the mud-wall edgings. The beds have been puddled round with ridges of earth and cow-dung, in which Echeverias, or Sempervivums, or Sedums have been stuck round, as regular as clock-work, just as children stick pebbles round their mud pies. This is the greatest blemish this year in the gardening of Hyde Park. Everywhere, in looking closely at the beds, the wretched little earth-wall catches the eye. In scores of cases the plants have not fallen over so as to cover these edgings; and, where no succulents were stuck in, they are quite bare. One is glad to see that this system is not spreading; at the Crystal Palace gardens, and elsewhere round London, where the old gently-rounded edge obtains, a much better effect results, and the plants look in better health than when raised by these ugly little banks. It is to be feared that neither our gardeners nor our public are at present prepared for such a sweeping innovation as "Amateur" suggests in the massing; it is, however, already carried out to some extent in the case of the annuals that are so well employed to hide the bare earth in Kensington gardens. There is nothing more objectionable than the brown dug surfaces in our public gardens, and this attempt to cover them is a move in the right direction.

NOTES OF THE WEEK.

— A BUNCH of Black Hamburgh Grapes was shown the other day at the Great International Horticultural Exhibition at Belfast, which weighed 20 lbs. 12 ozs. This was furnished by Mr. Hunter, of Lambton Castle, and exceeds the weight of Speechly's cluster of Syrian by about a pound; setting aside the fact that the latter variety is a much coarser Grape, bearing large clusters under the most ordinary cultivation, the analogy between the two Grapes in this case being similar to that existing between a Queen Pine and a Providence. This cluster is the largest as yet grown in Britain, and, like the celebrated 15 lbs. Providence Pine grown at Gunnersbury by Mills, will long be remembered as a triumph in the history of fruit culture. It will be remembered that Mr. Hunter exhibited a bunch of Black Hamburgh last season, weighing 13 lbs. 4 ozs., a figure and description of which appeared in *THE GARDEN* (see p. 514, Vol. IV.) at the time.

— SOME of the papers allude to what they term a new kind of table decoration, and describe a recent instance of it in the house of a Russian lady in London. The table was entirely covered with Moss—the Fern-like Moss which is plentiful in Covent Garden. There was the usual white cloth, but the only evidence of it was seen in that portion which hangs at the sides of the table. Flowers were profusely introduced, and the effect was altogether unique. This is said to be one of the most ordinary kinds of table decoration in the aristocratic houses of Russia. We have seen much the same kind of decoration carried out by Mr. Wills.

— AN appeal recently made through the press for the preservation, as an open space, of a small piece of land in the east of London, abutting on Victoria Park, has met with success. The Commissioners of Woods had stated that they would accept the sum of £900 for the fee simple of this land, if secured for the public as a part of Victoria Park. Mr. Bryant, of the firm of Bryant & May, has now come forward and has offered to hand over to the Committee of the Park Preservation Society the sum of £900 for the ground in question, in order that it may be purchased from the Commissioners of Woods, and preserved as an open space for ever. It is further stated, that the piece of land thus generously given to the public by Mr. Bryant, would be admirably adapted for a site for the Temple Bar Gateway.

— WE are pleased to note the great abundance of fruit now to be seen daily in Covent Garden Market, and even that of the street barrows is of far better quality than has usually been the case in former years. Pears and Apples are alike of excellent quality, and extremely moderate in price. Grapes of home growth are now augmented by supplies from the Continent (Lisbon). The trade in imported fruit is as yet in its infancy, and is evidently destined, ere long, to influence the prices of home-grown produce in a remarkable degree. When we see that it is remunerative to import fruit from America and the Continent at considerable expense and trouble, the thought naturally suggests itself that it would pay us in more ways than one to grow fruit more abundantly at home.

— CONSPICUOUS among plants in bloom on the rock-work at Kew, is a small example of *Rhexia virginica*, a hardy Melastomad, which bears bright rosy-purple flowers in tolerable abundance. This, by no means common plant, may also be found associated with various hardy Ericaceous plants in Messrs. Osborn's nursery at Fulham. Another desirable plant now in flower on the rock-work at Kew, is *Micromeria piperella*, a member of the Sage family, dwarf and spreading, and bearing a profusion of pretty pink or pale rose-coloured flowers. In the herbaceous grounds a plant of *Clematis æthusæfolia* is likewise flowering nicely. Its blooms are of a creamy white colour, and although not of a striking character, are borne somewhat freely, and the plant is, moreover, desirable on account of its distinctly cut foliage.

— ON Monday next, and the succeeding Mondays throughout September, the beautiful gardens at Heckfield Place, the seat of Lord Eversley, are, by his lordship's kind permission, thrown open to the public on the presentation of tickets of admission, which may be obtained at Mr. Wildsmith's cottage on the common close by. Heckfield is charmingly situated on the highlands of North Hants, five miles from Winchfield Station, on the South-Western Railway, and is surrounded by a finely wooded country and much picturesque scenery. It lies in the centre of such fine places as Bearwood, Strathfieldsaye, Elvetham, and Dogmersfield Park, and, although not so palatial in character as either of these residences, is yet the most beautiful in all that relates to gardenesque effects. Just now the flower beds are at their best, and there is also a beautiful piece of decorative bordering in the kitchen garden, and something very diverse, but equally pleasing, in the sub-tropical bedding around the lakes. The fruit houses, and plant houses, too, have their attractions; one has but to glance within the doors of that fine span-roofed Vinery on the west side of the kitchen garden to see that Grapes can be grown here in perfection. This house is wholly devoted to Lady Downes,

the crop of which is faultless, both as regards bunch and berry. In all departments the utmost neatness prevails, and those, therefore, who may be induced to pay Heckfield an early visit may be assured of a genuine treat.

— THE grounds surrounding the East London Museum are being converted into an ornamental garden, under the superintendence of Mr. McIntyre, the chief gardener of Victoria Park.

— WASPS this year abound in the north of Scotland and in Wales. No one ever remembers having seen so many in one season, and they are at present making themselves very troublesome in every household. Several hives of the honey bee have been killed with them, and in almost every garden the fruit has been destroyed and eaten by them.

— OUR attention has been called to the numerous new forms of the tuberous rooted hybrid Begonias, so admirably adapted for rock-work and border culture. Messrs. Veitch & Sons have many fine varieties planted out on their rockery, a position in which they grow vigorously. One plant has stood out for the last three winters, and is now a great mass, a yard through and about 2 feet high, and as it bears a profusion of bright scarlet flowers, it is a very attractive object.

— GROWERS of what are called Dutch bulbs will be glad to know that the supplies imported this season are unusually fine in quality, being even superior in that respect to those imported last year. Hyacinths, Tulips, and Narcissus, are said to be considerably above the average in weight. This is all the more satisfactory, inasmuch as the quality of nearly all Dutch bulbs, especially Hyacinths, has been on the decline for several years past. Next year we may, therefore, expect our spring exhibitions to be unusually brilliant.

— THE authorities of Paris set up recently a large steam-engine at Clichy to supply the sandy plain of Gennevilliers, on the opposite side of the Seine, with sewage-water. The experiment has proved successful. The *Journal of the Society of Arts* says that the market gardeners are now asking for a fuller supply, and the machinery is not powerful enough for the extension of the service. A good supply of sewage-water is an advantage likely to be fully used by the Paris market gardeners, who, unlike our own, have long been accustomed to water profusely with ordinary water.

— IMMENSE quantities of Plums, Apples, Pears, and other fruit, are being brought to the Tyne by the General Navigation boats from Hamburg, Rotterdam, and Antwerp. Contrary to expectations, the Continental fruit crop is a large and bountiful one, and many thousands of baskets of Plums and Apples, brought thence by steamer to Newcastle Quay within the past ten days, have been sent into the mining and manufacturing districts of Northumberland and Durham for sale. The fruit is fine in quality, and is sold retail at a very moderate price.

— MR. GROOM has sent us from Henham Hall Gardens, Suffolk, a very remarkable Melon, of which the seed was brought from Africa, by Sir Samuel Baker. This Melon is wholly distinct from anything we have seen cultivated in Europe or America. In size it is more like a large Gourd than a Melon, yet it has the true Melon skin, and is beautifully netted on a deep golden ground. Large fruits are not usually distinguished for superiority of flavour, and we were surprised to find on cutting up the fruit in question, that the flavour was of the finest possible quality. Mr. Taylor, of Covent Garden, who, as a judge of fruit, is second to none, also examined the Melon and pronounced its flavour to be of the finest kind; such as he had only previously experienced in Asia Minor and North Africa. We hope that Mr. Groom may be enabled to preserve such a valuable variety true, as it is sure to deteriorate if grown near the kinds commonly cultivated. We hope to say more of this fine fruit and its culture on another occasion.

— AT Anner Mills, the residence of Mr. Clibborn, near Clonmel, the gardener lately found a strange-looking object suspended from a slender branch of an Apple tree. It was nearly spherical, about as large as an ordinary-sized cannon ball, and was streaked all over with the brightest colours. He soon discovered that it was a wasps' nest, but for some time was puzzled to account for its varied tints and singular formation. At length the problem was solved. Mr. Clibborn had, some time before, procured a quantity of long paper "shavings" of different colours—red, blue, green, yellow, and white, which he flung over his Strawberry beds, to protect the fruit from the attacks of birds and insects. A colony of wasps, instead of being "warned off," made frequent visits to these coloured streamers, and, with singular ingenuity, reducing the paper to pulp, soon carried it away for the construction of their nest, which quickly grew under the united efforts of quite an army of these little busy artists. The most wonderful part of their work is the regularity of those undulating lines of colour as they were carried around from side to side. This curious nest has been preserved intact, and it is now an object of much interest to visitors at Anner Mills.

HARDY PLANTS OF THE HIMALAYAS.

THOUGH a good many fine plants from the Himalaya Mountains are tolerably well known in English gardens, yet few, except botanists and travellers, have any idea of the number which still remain to be introduced. With a view of calling the attention of those who have friends in India, and who might easily get seeds and roots from them if they took a little trouble, I should like to mention a few of the most beautiful and curious plants I know of. Some of these I have seen myself, but most are unknown to me, except from the figures and descriptions of Wallich, Royle, Baker, and others. As these works* are to be found in most public libraries, it is unnecessary to give more than an idea of the plants, with their localities, as far as at present known. When it is considered that the whole of Nepal, except the environs of Kathmandu, which were explored by Wallich and his native collectors, and almost the whole of Bhotan and the hills east of it, are still quite unknown to travellers or naturalists, some notion may be formed of the wonderful wealth of the flora of these mountains. It must also be borne in mind that the plants here mentioned, which are likely to prove hardy in England, are only found in the temperate and Arctic zones of the mountains, and that the plants of the sub-tropical and tropical zones are probably three or four times as numerous. It must also be observed, that though a number of plants are common to the whole range, from Kumaon to Sikkim, a larger part of them are more restricted in their range, which may be attributed in a great measure to the difference between the climate of Sikkim and the north-west Himalayas. In the former the rainy season commences in April, and continues until the end of October, almost without intermission, whereas in Kumaon and the hills above Simla, the heavy rains do not begin until June, and though the rainfall is not much, if at all, less than in Sikkim, the winter is colder, and the summer, or at any rate the early part of it, dryer and hotter. Of course the climate, temperature, and rainfall vary immensely in different parts of the mountains, but, as a rule, it may be said that the mean temperature of the region, 8-11,000 feet in Sikkim, and 5-9,000 feet in the north-west, approaches pretty closely the average mean temperature of Great Britain. Most Himalayan trees and plants, especially those of Sikkim, which suffer in this country more from spring frosts and dry summers, than anything else, would probably thrive better in an unheated house, where they could be shaded and syringed constantly during summer. I will commence with a few of the Monocotyledonous plants, as being those in which I am most interested, and also because several of the principal genera have been so well worked up by Mr. Baker, in those able and careful revisions of Liliaceæ and Iridaceæ, which have appeared (and which I hope will continue to appear) from time to time in the *Journal of the Linnean Society* and elsewhere.

Among Lilies, we have already introduced *L. giganteum*, *polyphyllum*, and *Wallichianum*, the latter of which, though possibly hardy in mild localities, is, I have no doubt, much better suited for greenhouse cultivation. Besides these, I gather from Mr. Baker's last paper that there are two species not yet introduced, viz., *L. nepalense* (Don) figured by Wallich in his "*Plante Asiaticæ Rariores*," iii., p. 267, belonging to the *Eulirion* group, and found in the west central Himalaya from Nepal to Kumaon; and *L. oxypetalum* (Baker), figured in Bot. Mag. 4731, as a *Fritillaria*, but now, I fear, quite lost in Europe, which grows in Kumaon up to an elevation of 12,000 feet. Of Tulips, only one is known, namely, *Tulipa stellata*, a species resembling *T. Clusiana*, but with larger flowers, and all the segments obtuse. It is found in the north-west at from 5,000 to 8,000 feet elevation, and also in southern Persia. This Tulip is included in Messrs. A. Roze's bulb list this year, but whether they have the true species or not I cannot say.

Among *Fritillarias* we have the well-known *F. rosea* or *Thompsoniana*, usually classed with the Lilies, the right name of which, however, is *Fritillaria macrophylla* (Don), and a nearly allied species, *F. Hookeri* (Baker), from Sikkim, where it was discovered by Dr. Hooker at an elevation of 9,000 to 10,000 feet. Then there is *F. Roylei* (Hook.) figured in "Royle's Illustrations," p. 92, a handsome species with tessellated flowers, ranging from Kumaon to Ladak, at high elevations.

Also *F. cirrhosa* (Don), a species with numerous narrow leaves curled at the tip; it grows in Nepal and Sikkim up to 10,000 feet elevation. *F. Gardneriana* (Wall.), is a one-flowered species found in the same districts as the last, but at a lower elevation. Of *Crocus*, one species only is at present known from Cashmere, which is referred by Mr. Baker to *C. sativus*. Other species will, no doubt, be discovered ere long in the mountains of Afghanistan and Central Asia.

Among Irises I know the following:—*Iris decora* (Wall.), from Nepal and Sikkim, at about 8 to 10,000 feet elevation. This is the plant figured by Sweet, Ser. II, vol. i, pl. 1, as *Iris nepalensis* (Don), and was introduced by means of seed many years ago, but is, I am afraid, quite lost now. It is said by Sweet, to have fleshy roots resembling those of a *Hemerocallis*; the flowers are pale blue, streaked with white, and very pretty. Sweet mentions another very dwarf species from Nepal, somewhat resembling *I. ruthenica*, but I can find no such plant in the Kew herbarium from the Himalayas. *Iris fragrans* is a species from Sikkim of which I know nothing; I have a species under the name from Mr. Wilson Saunders's garden, but have not yet flowered it. *Iris kumaonensis* (Wall.), *longifolia* (Royle Ill. Him. pl.), a species which appears from the plate to resemble *decora*. It is found in the north-west up to 11,000 feet. *Iris sulcata* (*fasciculata* of Jacquemont) P, found from the Khasia hills up to the north-west. *Iris aurea* (Lind.) from Cashmere, a plant which resembles and is very likely the same as *I. ochroleuca* of Europe. I have seedlings of two of these, and possibly of another species from Yarkand, but they have not yet flowered.

Of *Polygonatums* we have a large number of species, only one of which, as far as I am aware, is now grown in Europe, viz., *P. oppositifolium* (Wall.), a very fine plant with large clusters of white flowers, streaked red, and succeeded by bright red berries. *Polygonatum Hookeri* (Baker) is a very minute plant, not more than 2 or 3 inches high, but having purple flowers as large, if not larger, than any species of the genus. It is found in the interior of Sikkim at 10,000 to 12,000 feet elevation. *P. cirrhifolium* (Royle) is a curious and pretty species, with small axillary flowers, and narrow leaves, much curled at the tip; it is probably the same as *P. sibiricum*, and is found in the Himalaya from 7,000 to 12,000 feet high, also in China and Siberia. *P. punctatum* (Royle, Bot. Mag. 5061) and *P. roseum* (Bot. Mag.) are, I am afraid, not now in cultivation, though both pretty species.* *P. peristylum* (Baker), from Sikkim, has yellow flowers, but is not so fine a plant as some of the others; and *P. graminifolium* (Hook.), though a very graceful little plant, is not showy. It grows in the north-west at 10,000 to 11,000 feet.

Nearly allied to the *Polygonatums* are the *Smilacinas*, of which there are several sorts. First and finest is *S. oleracea*, a most striking plant, which is found in the temperate region of Sikkim; it grows to a height of 5 or 6 feet, and produces a large terminal panicle of purple flowers. The young shoots of this plant, which somewhat resemble *Asparagus*, are eaten by the natives of Sikkim under the name of *Chokli-bi*, as related by Dr. Hooker, who was himself, during his arduous and adventurous explorations in that country, reduced to eking out his scanty store of provisions with such herbs as he could get. Let me recommend any gardener who has not read this charming and most valuable work—"Hooker's Himalayan Journals"—to take the first opportunity of doing so. It is one of the best and most interesting books I know. Another very pretty *Smilacina*, from Sikkim, is *S. oligophylla* (Baker), a small plant with four *Cypripedium*-like leaves, and a raceme of pink flowers resembling those of *Convallaria majalis*. *S. purpurea* (Wall.), from Kumaon and Nepal, is a pretty plant, in the style of *S. stellata*, but with purple flowers. There is a white variety or species called *pallida*, also from the north-west. In the genus *Fluggea*, which comes near *Smilacina*, we have one or two fine plants, especially *F. Wallichiana* (Kunth), which grows near Darjeeling, at 8,000 feet elevation. It resembles *Ophiopogon* in habit, but has a spike of *Convallaria*-like flowers of a purple colour. The roots are curious, forming many tubers like those of *Apios*

* Wallich's "*Plantæ Asiaticæ Rariores*," Royle's "*Illustrations of Himalayan Plants*," Baker's "*Revision of Tulipæ*," in *Journ. Lin. Soc.*, 1874, p. 211.

* I see a *Polygonatum roseum* in Messrs. Backhouse's catalogue, from Siberia, which may very likely be the same.

tuberosa. *F. dracænoides* (Baker) is a plant more curious than pretty, the stem of which is covered with sheathing bracts or leaves of a dark purple colour. It is also found near Darjeeling. H. J. ELWES.

(To be continued.)

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Arrangement of Fruit for Dessert.

In the case of all handsome dessert services, six dishes are generally devoted to fruit, the highest being intended for the top and bottom of the table; and, where additional dishes are wanted for mixing in amongst china stands, none are more suitable than gracefully-shaped glass baskets, oval-shaped glass dishes, which lay flat on the table, and small groups of Parian figures supporting dishes made of the same material. Monotony or sameness in the character of the stands should always be avoided; therefore they should be of different heights and shapes, the tallest being placed, as has just been stated, at the top and bottom of the table. The fruits generally selected for these end stands, when in season, are a Pine and Melon, and they look best resting on a mat formed of Vine leaves, which, in autumn, when a little tinted, have a pretty appearance; and, in addition to the leaves, a wreath of Maiden-hair Fern may be arranged round the base of each fruit. Next in importance are Grapes, which, when Pines and Melons are unattainable, take their place; but, at other times, I like to see them arranged in the glass baskets already referred to. The white and black may be mixed, but if the baskets be small (which look much the best), I like one bunch of each colour in each basket. The baskets should be lined, if possible, with fresh green Vine leaves. Round the handles should be twisted a spray of *Lygodium scandens*, and among the fruit itself should be inserted a few fronds of Maiden-hair and some Vine tendrils. Along with the white Grapes might be put a few tinted leaves of Virginian Creeper, and among the black a few variegated Maple leaves. These also associate well with Plums of the same colours, which look best grouped in flat oval dishes, and may be treated much in the same manner as Grapes; both Plums and Grapes must be carefully handled, or their delicate bloom becomes destroyed, and then much of their beauty is lost. Peaches and Apricots look handsomest in the Parian stands, resting on a mat of bright green Moss, and decorated only with a spray of *Lygodium* twined through them, so as just to tone down their bright colours, but nothing more, their individual beauty being too great to be hid. Strawberries and Cherries also look well in these stands, and should be grouped in the form of pyramids (the stems being turned inwards), with leaves of the latter built up amongst them, the whole being decorated with fronds of Maiden-hair Fern. Greater variety may still be created, if required, by using some of the tropical fruits which are generally on sale in Covent Garden, such as Bananas, Figs, and Dates; Nuts also come in usefully for such purposes. Then there are Apples and Pears, a few handsome fruits of which look well on an oval glass dish decorated tastefully with Ferns, or other foliage of a similar kind. Where fruit dishes are used on the breakfast-table, I like them to be of china, as I think glass there looks out of place. The fruits used for this purpose consisting, as they do mostly, of Strawberries and Currants, should be merely decorated with their own leaves. Where baskets of fruit are employed on the dinner-table, they look best arranged around the centre piece. Stiffness and formality, as regards the position of fruit dishes, should be avoided as much as possible; for instance, a straight line of dishes, running the length of a table, gives it a heavy look. The only fruit which I dislike to see on a table are Oranges; not that I have any dislike to their taste, for nothing is more refreshing on a hot July day, after dinner, than a well kept Orange. It is the colour to which I object, and which does the damage. It kills other fruit, flowers, and even the china, if the latter has any shade of yellow in it; and no amount of foliage seems to tone it down. The only fruit

with which they at all associate well are purple Grapes, and Plums of the same colour. I have found the effect of my table so often spoiled by having Oranges on it, that now, when I want it to look particularly well, I make it a rule not to have them placed amongst other fruits, but handed round with others different from what are already on the table. Many place flowers through their stands of fruit, and in some few cases the mixture looks well; but it will be found a good plan, where this is done, to insert the stems of the flowers in small glass tubes, such as are sold for coat flowers, filled with water—a plan which also answers for keeping the Fern fronds fresh, if required for any lengthened period. A. HASSARD.

Barrelier's Bell-flower (*Campanula Barrelieri*) as a Window Plant.—I consider this to be one of the finest of all dwarf growing Bell-flowers for window culture, and after trying many other kinds, including *C. pulla*, *C. turbinata*, *C. fragilis*, and others, I have given this the preference. Grown in a pot of rich sandy earth it forms a bushy little plant in the spring, while a month or two later its branches elongate until they hang gracefully over the pot sides covered with pale purplish-blue salver-shaped flowers. One of my plants looks splendidly just now, being a perfect mass of flowers. A good potful of this plant makes a capital substitute for a hanging-basket, and the flowers show to better advantage when the plant is suspended in the window or on the balcony outside. It is also a capital bracket plant, or it looks well on the window-sill, where the shoots can hang down freely. The two best *Campanulas* for the window gardener are, undoubtedly, this and *C. pyramidalis*, which are very distinct from each other in habit of growth, and both perfect in their way.—B.

COTTAGE GARDEN SOCIETIES.

In the following remarks on these societies, which are so useful in spreading a taste for gardening amongst the working classes, I wish to direct special attention to a system that is found to answer admirably here, viz., that of offering prizes for the best kept and cropped gardens and allotments, and for the best specimens of window gardening. These are annually inspected during the summer months, generally in June, and from several years' observation, as one of the judges, I can confidently state that for a very trifling cost a great amount of good may be effected, not only as regards advancing the art of gardening, but in helping those who strive to help themselves. In fact, the competitors are sure of a reward, either in the shape of a prize or in the form of increased production, and, consequently, an increased amount of food for themselves and families. In looking over a number of gardens lately, situated in different parishes, I was agreeably surprised to find the crops in them most luxuriant, and that after one of the most persistent droughts that we have experienced for years. In fact, the difference between garden and field crops, or, in other words, between deep cultivation and shallow, was more marked than I ever remember to have seen it, giving substantial proof that in deep culture and thin seeding lie the chief elements of success. Many of our principal prize winners for Potatoes trench their ground three spades deep, and plant the sets 3 feet apart each way. The gardens, too, were one and all profitably stored with a good stock of plants ready to succeed crops that are early cleared off; and, although many of them are large, scarcely a piece of vacant ground was to be seen in the whole number, as I need scarcely remark that fallow ground is not considered profitable gardening. The allotments do not, as a rule, present much variety, being mostly occupied with root crops for the winter consumption; but all of them are most excellently cultivated. Window gardening was also well represented, considering the means at the disposal of the competitors. Some of the old-fashioned cottages, overhung with sweet-scented climbers and the window aglow with flowers, presented quite a picturesque appearance. The favourite window plants seemed to be *Calceolarias*, *Fuchsias*, *Geraniums*, and a few fine foliaged plants, such as *Tricolor Geraniums* and *Coleus*. As regards the little flower gardens in front of some of the cottages, they, likewise, bore evidence of the effect of example being more powerful than precept. I have often observed, indeed, that in the neighbourhood of large public gardens, or of large private establishments, that, through the liberality of their owners, are open to the public, the system of flower gardening adopted in such places is reflected, as it were, in the smaller gardens around. Therefore, whether in the case of the scarlet and gold of geometrical gardens, or that of mixed borders of herbaceous plants, or the thousand lovely forms of foliage plants, let us at all times be careful to set up such examples as will be worthy of imitation. JAMES GROOM.

THE FLOWER GARDEN.

AN ORNAMENTAL MINIATURE GOURD.

(BRYANOPSIS LACINIOSA.)

THE pretty illustration of the Gooseberry Gourd, in the first number of the present volume of THE GARDEN (see p. 3), has induced me to bring under the notice of your readers another

pretty variety of that interesting family of plants. The plant from which the accompanying sketch was taken was raised from seeds brought from Africa last year by Sir Samuel Baker, and presented by him to my employer last winter. It is, therefore, looked upon as a sort of souvenir from a comparatively unknown land. Sir S. Baker informed me that, in its wild state, this variety covers dwarf trees and shrubs with its slender climbing shoots, which are loaded at every joint with pretty little fruits, which, in a young state, are bright green, striped and spotted with white, but which, when ripe, change to scarlet, a colour which sets off the white spots and pencillings to increased advantage. The fruits, as will be seen, are borne in clusters of from three to four together. The foliage, being of a distinct shade of green, renders the plant effective, even when not in fruit. It has been growing in our Melon-house, in which it quickly covered a large trellis, and is loaded with fruits which, were it not for their white marblings, might easily be mistaken for those of *Solanum Capsicastrum*. I was told that some of the African tribes use the long slender shoots of this Gourd for garlands and head dresses, purposes for which its habit of growth eminently fits it. Long festoons of it, laden with fruit, might be usefully employed for garnishing our desserts and for twining round stems of March stands on the dinner-table, or the sprays of crimson fruit might be allowed to hang naturally and gracefully from the margins of ornamental vases. Gourds of this description well deserve more attention than they have hitherto had.

JAMES GROOM, Gardener to Earl Stradbroke.

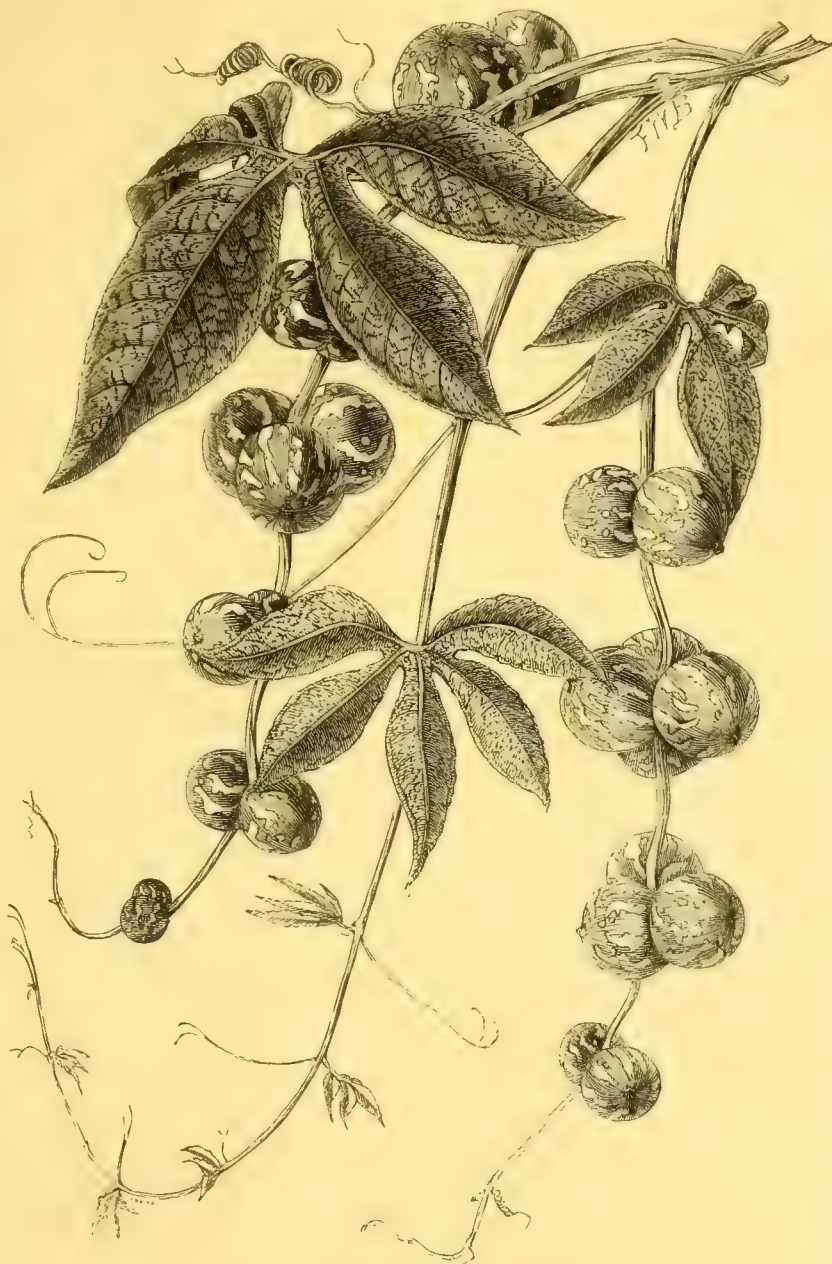
Henham Hall, Wangford.

INDIAN GARLAND FLOWER.

(HEDYCHUM GARDNERIANUM).

THIS truly beautiful and Oriental flowering plant, was introduced into our gardens as far back as the year 1819, and, being a native of the East Indies, has generally been considered and treated as a stove-plant, where it grows and flowers profusely. During 1868, I first saw this species cultivated and freely flowered (under cool treatment), in the conservatory belonging

to William Craven, Esq., of Brunnington House, Corstorphine, near Edinburgh, in which it is kept all the year round. I was not aware till I saw it at Brunnington House, that it could be so treated. It is frequently grown in warm-houses and removed to the greenhouse or conservatory during the flowering period, and when past, again returned to warm quarters, and is now very generally seen in many of the cool conservatories and greenhouses around Edinburgh, where it presents rather a tropical appearance amongst the ordinary greenhouse plants. Having ascertained that it thrives so well in a cool greenhouse, I planted some strong roots in the open border during the spring of 1873, where they grew well but did not produce flower-spikes. Late in autumn the surface of the ground over the roots was covered with some stable litter, which was afterwards dug in. During the spring of 1874, numerous stems were produced, but none of them strong enough to carry flower-heads, evidently from the want of climate, but I have great hopes that it will succeed when planted at the base of a wall with a south aspect, where it is but natural to suppose that the growth should be nearly as well



Fruit-bearing sprays of *Bryanopsis laciniosa*.

matured as in a cool conservatory. In the climate of London it ought to produce flowers in many gardens under border-cultivation, particularly in the so-called sub-tropical ones. If it is cultivated in the open air round London, which I have not been fortunate enough to observe, it is certainly not to such an extent as it is justly entitled to from its stately appearance. As soon as the blooming is over in the conservatory, the early flower-stems ought to be cut down, so as to strengthen the later-blooming ones. A few of the un-

flowered stems may safely remain on throughout the winter, and, if strong enough, will bloom early. During spring the plants can be re-potted, and, if necessary, divided, as the rhizome or surface roots are capable of being separated into numerous plants. If specimens are wanted to flower early, the pots or tub containing them should be placed in flats of water, some may be put in the conservatory, and treated in the ordinary way without water flats, some could be put in heat, while others, after their flower-stems are matured, can be placed in sheltered situations in the open air and taken in when required; by these various means, a succession of flowering plants may be obtained during eight or nine months in the year. The *Hedychiums* thrive well when planted in soil mixed with a little old manure and sand, while, liquid manure, occasionally applied during the growing season, will strengthen the plants and increase the richness of the flower-spikes. Plants in pots or tubs about 14 or 15 inches in diameter, frequently have from eight to ten blooming heads at one time, while larger pots or tubs may have double that number; many of the heads being 14 inches long and 18 inches in circumference; a succession of flower-spikes is often got on the same plant. For exhibition or competition purposes, flowering *Hedychiums* would prove most interesting subjects. Numerous species are now in cultivation, in colours red, yellow, orange, and white. It is, therefore, quite possible to conceive, that in the hands of a skilful hybridiser, a series of crosses may be produced, which, some day or other, may prove interesting objects for the conservatory.

JAMES M'NAB.

THE FRENCH MARIGOLD.

"HANDSOME, but unsavoury," is the character truth compels me to give to the French Marigold. Still, its peculiarity of perfume is not discernable until it is handled, and, perchance, that should be to many gardeners a good reason why they should largely use this flower to decorate their borders, as nothing can be more annoying than to see the members of the household traversing the flower-borders and beds, day after day, with basket and shears, and sweeping off all that is gay and beautiful amongst the flowers. But this Marigold has other claims than this upon our notice. As a decorative plant it is one of the most effective of all tender annuals, and none gives such a continuity of bloom; as, did not the frosts interfere, it seems doubtful whether it would ever die, and certainly as long as there was life there would be flowers. Our knowledge of the French Marigold has hitherto been chiefly linked with a tall branching and straggling habit of growth, and flowers of medium size and indifferent quality, and chiefly dark-coloured. In the south the French Marigold has rarely, if ever, been elevated into the position of an exhibition flower, and in this respect, there has been but little stimulus given to its improvement. In the northern portions of the kingdom, however, it is much cultivated for show purposes, but the striped flowers are only favoured, and as these have generally been found on the strongest-growing plants, there has been no inducement to improve the habit of the plant for border or bedding purposes. Two things, however, have assisted to promote that object, quietly, but surely; first, the failure of the yellow *Calceolaria* as a bedding plant; and, second, the introduction from the Continent of single and double forms of the *Tagetes*, which drew attention towards the French Marigold as a proper substitute. It may be that a dwarfer habit of growth sported out from the taller kinds, naturally, but it is certain that several years since, when I took these Marigolds in hand, I selected some that displayed a more compact form of growth, and these were lifted from the others and set aside to seed, without being impregnated with the pollen of the tall kinds. Thus, in a few years a distinct dwarf compact-growing strain was obtained, having flowers of good quality and of several hues of colour. From among these again I commenced to select colours that would make effective bedding varieties, securing first the form known as *Aurea floribunda*, which received a first-class certificate at South Kensington, and which promises to make the best yellow summer bedding plant in cultivation. Its habit is exceedingly dwarf and compact, being, when in full bloom, about 10 inches in height, and covering a square foot of ground. The flowers are very double, of good size, golden-yellow in colour, and borne most profusely. Allied to this is another selection that is just a trifle taller in growth, the flowers being equally double, but of a rich orange. And still another selection has an exactly duplicate habit and quality of bloom, the flowers being chestnut and edged with gold. Either of these varieties will make

very effective beds, and when once established, are quite independent of climate, flowering freely whether it be hot or cold, wet or dry. As I grow a large quantity of these Marigolds, I simply transfer them from the seed bed to the open ground, dibbling them in about 12 inches apart, but, if used for bedding and treated in this way, it would be well to have some plants in reserve potted off singly, as in the finest strain there will always be some flowers that would be better out, and, with plants in reserve, the vacancies are soon filled up. It is a curious fact in relation to these dwarf kinds, that while some of the plants produce semi-double flowers, none of them produce single ones. In the finest of the tall strains some single flowers will always result. In addition to these selected bedding forms, I am trying to secure on the dwarf habit of growth, not only good shaped flowers, but also some of increased size, and am this year rewarded by having some self-coloured blooms on plants 12 inches in height, as large as are the best flowers of the lemon-coloured African Marigold. Striped flowers are also showing profusely on plants 9 and 10 inches in height; and I am hopeful that, in a very few years, the tall branching kinds may here be looked on as things of the past. During the past week or two the wind has been blowing with great force, and now and then a large branch of the tall kind is twisted off with ease; the dwarf kinds are, however, quite uninjured, as they are so stiff and strong that the wind exercises no injurious influence over them. The mixed strain comprises striped, yellow, orange, chestnut, brown, and many varicoloured flowers, and furnishes most admirable plants for border decoration. Seed should be sown, in boxes or pans, at the end of March; and, if placed on the shelf of a cool house or in a frame, will speedily germinate. When the plants are 3 inches in height, it will be better for them to be pricked out from 2 to 3 inches apart in a cool frame, giving plenty of air, and then they will plant out safely, and with nice balls of earth attached, as soon as all danger from frost is over; and, as I have before mentioned, if a few plants of the bedding kinds be kept in reserve, then the beds may be filled to the best advantage, and all the flowers prove of the best quality and true to colour.

ALEX. DEAN.

Bedfont.

CENTAUREA RAGUSINA.

For toning down glaring colours, nothing could possibly be finer than this. Solitary plants of it placed in the centres of small circles, and surrounded with any bright colour, look grand. Long lines of it, backed and fronted with any dark-foliaged plant or glowing flowers, give a very pleasing and harmonious relief. Where large ground-works of scarlet, purple, or blue are made, an elevated plant of this, placed here and there, break up the monotony which would otherwise exist, and enhances the appearance of the outlying colours in a very marked degree. Wherever any vivid or intense colour appears, this plant should never be far from it. The pale silvery foliage of isolated plants judiciously dotted on lawns on the bright green Grass, and amongst dwarf dusky-leaved shrubs, has also a good effect. When used for this purpose, the plants may either be planted out or plunged in their pots, as many of the sub-tropicals are. It is never injured by wet, and its robust compact-growing habit prevents the wind from having any tarnishing influence on it. It thrives in the coldest situations throughout the summer. The propagating of *Centaurea ragusina* is a matter often attended with very indifferent results. It is, however, as easily, and may be as successfully, rooted as *Zonal Pelargoniums*. When taking cuttings from the old plant, they should not be cut away; but pulled off with a heel, so that they may have a hard base. The small firm shoots should be chosen in preference to large soft ones. In making, the knife should be used as little as possible. Each cutting should be put singly into a small thumb-pot filled with a mixture of loam, leaf-mould, and sand, and set in a cold frame. One good watering is sufficient until they are rooted; and, if the weather is excessively damp, the lights may be drawn over them, and tilted up in back and front; otherwise, they may remain fully exposed. Treated in this manner, I have rooted a batch of 2,000, without losing twenty out of the lot. Autumn is the best time to propagate them. They will fill their pots with roots in three weeks; and, if plenty of wintering accommodation exists, they make all the better plants by being shifted into 4-inch pots, where they will grow a little this autumn, and make nice strong material for bedding out next year. A cold frame, from which frost can be excluded, is a suitable place for their winter quarters. The leaves should be kept dry, as they are rather liable to damp during the short days. Every favourable opportunity should be embraced for liberal air-giving; they also winter well in an airy Vinery or greenhouse. Old plants are sometimes lifted and kept over the winter. Where large plants are required, this is a sure means of obtaining them; but, for ordinary bedding purposes, autumn-struck cuttings are the best.

J. MUIR.

BEARDED IRIS (I. BARBATA), COMMONLY CALLED GERMAN IRIS.

My collection of this section of *Iris* has been pronounced to be very complete. It numbers upwards of 200 varieties, from which I have selected those enumerated. The better to understand my descriptions, I furnish a wood-cut, by which it will be observed that one half of the petals are erect—these are called standards; the other half droop—these are called falls, while the small tongued parts of the flower are called petioloid stigmas, under which run the "beards." The flowers in this section are all large and handsome, and more or less beautifully mottled in the standards and reticulated in the falls, the beards ranging from delicate primrose to orange, and the petioloid stigmas frequently materially enhancing the general effect by colour and contrast. I mention this, as in my descriptions I have not attempted to take in all these points, but deal with the colours which strike the eye on first looking at the flower. There is no flower, however, that so improves by examination. At first sight its beauty is equal to that of an *Orchid*, but, on closer examination, I have no hesitation in saying it possesses points of interest surpassing those of the finest epiphyte. In colours there are the richest yellows, the intensest purples, the most delicate blues, the softest mauves, and the most beautiful claret-reds. There are whites and primroses, and bronzes of every imaginable shade; indeed, language fails



Iris iberica.

to picture the beauties of this flower; and, consequently, my descriptions fall far short of the reality. And this will be readily understood when I state that there may be found in almost any one of the flowers from ten to thirty different shades, all harmonising and blending in the most perfect manner imaginable. Those who have not used this *Iris* for surrounding artificial lakes and ponds, or for growth in the flower borders, shrubberies, and woodland walks, should do so; for, wherever a large quantity of cut flowers is required from May to July, these plants, when established, will yield them bountifully; as, with good cultivation, they increase in size annually till they attain large proportions, each plant yielding from fifty to a hundred spikes of bloom.

I. germanica (Reich.).—Standards, blue; falls, purple.
 „ violacea.—Standards, purple; falls, dark purple.
 „ alba (Florentina).—Standards and falls, white.

The above are the first of the *barbata* section to flower, and, being distinct from each other in colour, and flowering at the same time, produce a fine effect early in May, and furnish a striking contrast. The following species and varieties come into flower as the above are going out of bloom; and it may be worthy of notice that *Aphylla* embraces the species *plicata* and *Swertii*, and the section is remarkable for the flowers having a frill-like appearance—an effect arising from the multitude of coloured transverse lines running round the margin of the standards.

Forms of I. aphylla (Bot. Mag.).—Standards, creamy white, margined with dull lilac; falls, white, margined with lilac.
 „ Beauty.—Standards, white, margined with lilac; falls, white, the upper part reddish-lilac.
 „ Bridesmaid.—Standards, very pale lavender; falls, white, margined with lavender.
 „ coelestina.—Standards, lavender-blue, mottled with deeper lavender; falls, white, margined with lavender-blue.
 „ Gazella.—Standards, red-lavender, mottled with white; falls, white, edged with purple.
 „ Madame Chereau.—Standards, white, margined with blue; falls, white, margined with blue.
 „ striata.—Standards, white, margined with lavender; falls, white and lavender.

I. amœna (Sweet).—Standards, white, tinged with lavender; falls, white, slightly margined with lilac.
 „ Alice Barr.—Standards, white; falls, white, tinged with lilac.
 „ Ariadne.—Standards, white, mottled with purple; falls, crimson, reticulated with white.
 „ Alvarez.—Standards, white, mottled with purple; falls, crimson, reticulated with white.
 „ Calypso.—Standards, white; falls, mottled with purple and white.
 „ Comte de St. Clair.—Standards, white; falls, crimson-purple, reticulated with white.
 „ Clio.—Standards, white; falls, crimson-purple.
 „ Donna Maria.—Standards, white; falls, white, tinged with lilac.
 „ Duchess de Nemours.—Standards, white; falls, purple, mottled with white.
 „ Duchess d'Orleans.—Standards, white; falls, crimson-purple, mottled with white.
 „ Glorietta.—Standards, white, slightly tinged with lilac; falls, white, heavily tinged with crimson.
 „ Incomparable.—Standards, pure white; falls, crimson-purple, reticulated with white.
 „ Juliette.—Standards, white, tinged with lavender; falls, violet-blue, tinged with white.
 „ Morpheus.—Standards, white, tinged with lavender; falls, violet, heavily mottled with white.
 „ Poiteau.—Standards, white, tinged with lavender; falls, very rich velvety-crimson.
 „ reticulata alba.—Standards, white; falls, purple-crimson, reticulated with white.
 „ Sir Garnet Wolseley.—Standards, pure white, slightly margined or flaked with purple; falls, velvety-crimson, very heavily reticulated with white.
 „ Unique.—Standards, white; falls, violet-purple, reticulated with white.
 „ Unique Surpassed.—Standards, white, tinged with lavender; falls, deep crimson, edged and reticulated with white.

I. neglecta (Bot. Mag.).—Standards, lavender; falls, upper part red-lilac.
 „ Agathe.—Standards, white, margined and mottled with lavender; falls, white, margined with lavender.
 „ Alice.—Standards, pale lavender; falls, rich purple, mottled with white.
 „ Alonzo.—Standards, lavender; falls, purple-crimson.
 „ amabilis.—Standards, lavender-purple; falls, rich deep crimson.
 „ Aspasia.—Standards, white; falls, purple-crimson, mottled with white.
 „ Aspasia Variety.—Standards, white; falls, dark purplish crimson, mottled with white.
 „ Atropos.—Standards, lavender-blue; falls, rich velvety crimson, upper part mottled with white.
 „ atro-purpurea.—Standards, deep purple; falls, very deep purple.
 „ Bocaze.—Standards, decided lavender; falls, purple, mottled with dark lines.
 „ Cameleon.—Standards, rich blue; falls, light crimson.
 „ Clara.—Standards, lavender; falls, rich purple-crimson, reticulated with white.
 „ Clarissima.—Standards, purple, shading to blue; falls, rich crimson, mottled with white.
 „ Cleopatra.—Standards, light lavender; falls, velvety purple-crimson, reticulated with white.
 „ De Bois de Milan.—Standards, light lavender; falls, rich crimson.
 „ Fairy Queen.—Standards, white, flaked with purple-blue; falls, purple-blue, heavily reticulated with white.
 „ Fantasie.—Standards, lavender-blue; falls, purple, mottled with dark lines.
 „ Florence Barr.—Standards and falls, delicate lavender.
 „ halophylla.—Standards, lavender-blue; falls, red-lavender.
 „ Harlequin Milanais.—Standards, white, tinged with lavender; falls, rich crimson-purple.
 „ Indigo.—Standards, purple; falls, deep velvety purple.
 „ Irma.—Standards, lavender; falls, crimson-purple, heavily mottled with white.
 „ Monsieur de Seble.—Standards, deep lavender-blue; falls, lavender-purple.

- I. neglecta.**—Nationale.—Standards, purple-blue; falls, rich velvety crimson.
- „ Penelope.—Standards, white, variegated with lavender; falls, white and lilac, reticulated.
- „ purpurea.—Standards, purple; falls, dark purple.
- „ reticulata.—Standards, pale lavender; falls, rich velvety crimson, reticulated with white.
- „ Rowlandiana.—Standards, lavender-blue; falls, light purple, upper part reticulated with white.
- „ ruberrima.—Standards, red-purple; falls, claret.
- „ Sultan.—Standards, lavender-blue; falls, very rich velvety crimson-black.
- „ Tatie Barr.—Standards, lavender-primrose; falls, pale purple.
- „ Victorine.—Standards, white, mottled with blue; falls, rich violet-blue, upper part mottled with white.
- „ Virginie.—Standards, lavender; falls, rich velvety crimson, lined with white.
- I. pallida (Reich.).**—Standards, dark lavender, passing to light lavender; falls, purple, passing to light purple.
- „ Assaurez.—Standards, rich red-purple; falls, claret.
- „ Astarte.—Standards, purple-lilac; falls, rich crimson-purple.
- „ aznrea.—Standards, azure-blue; falls, violet-blue.
- „ Dalmatica.—Standards, lavender-blue; falls, lavender, tinged with purple.
- „ Duke of York.—Standards, light claret; falls, dark claret.
- „ Garibaldi.—Standards, rose-lilac; falls, rose-purple.
- „ Maerisart.—Standards, mauve; falls, purple-crimson.
- „ Madame Pacquette.—Standards, rich claret-red; falls a deeper shade of claret-red.
- „ Queen of May.—Standards and falls, rose-lilac.
- „ Raphael.—Standards and falls, deep lavender-blue.
- „ Rowlandiana purpurea.—Standards, deep lavender; falls, purple.
- „ rubella.—Standards, red-purple; falls, deep red-purple.
- „ speciosa.—Standards, red purple; falls, rich crimson-purple.
- „ variabilis.—Standards, light purple; falls, deep purple, both fading off to slate-lavender.
- „ Walner.—Standards, deep lavender-blue; falls, purple, mottled with white.
- I. squalens (Reich.).**—Standards, primrose-bronze; falls, crimson-purple, reticulated with white.
- „ Arnols.—Standards, bronze-purple; falls, rich velvety crimson.
- „ Bossuet.—Standards, sulphur-bronze; falls, crimson, heavily reticulated with white.
- „ Cerbere.—Standards, lavender-bronze; falls, crimson-purple, reticulated with white.
- „ Dr. Bernice.—Standards, coppery-bronze; falls, very rich velvety crimson.
- „ Folgerie.—Standards, yellow-bronze; falls, crimson-brown, reticulated with white.
- „ Hericart de Thury.—Standards, bronze-primrose; falls, red-brown, reticulated with white.
- „ Hugh Block.—Standards, primrose-bronze; falls, reticulated with light purple, white and brown.
- „ Icarus.—Standards, primrose-bronze; falls, purple-crimson, reticulated with white.
- „ Innocenza.—Standards, blue-lavender, tinged with primrose; falls, decided lavender.
- „ Judith.—Standards, bronze-primrose; falls, dark crimson-purple, reticulated with white.
- „ Julius Cæsar.—Standards, yellow-bronze; falls, rich velvety-crimson.
- „ Lady Jane.—Standards, brown-bronze; falls, crimson-bronze.
- „ Lady Seymour.—Standards, lavender; falls, white and purple mottled.
- „ Lady Stanhope.—Standards, bronze-primrose; falls, rich velvety crimson, narrowly margined with yellow and reticulated with white.
- „ La Prestiose.—Standards, glittering bronze; falls, rich velvety-crimson, reticulated with white.
- „ latifolia.—Standards, primrose-bronze; falls, purple, mottled with white.
- „ lavendulacea.—Standards, lavender, tinged with primrose; falls, decided lavender.
- „ La Vesuve.—Standards, blue, mottled with bronze; falls, rich purple-crimson.
- „ Lord Grey.—Standards, coppery rose; falls, deeper coppery rose.
- „ Monsieur Cherion.—Standards, sulphur-bronze; falls, crimson-velvet, mottled with white.
- „ Monsieur Fries.—Standards, primrose-bronze; falls, light purple.
- „ Mozart.—Standards, brown-bronze; falls, purple-bronze and white mottled.
- „ Mrs. Meston.—Standards, bronze-purple; falls, rich purple.
- „ Pancratius.—Standards, primrose-bronze; falls, pale purple.
- „ Phydias.—Standards, brown-bronze; falls, rich deep crimson.
- „ Racine.—Standards, light bronze-purple; falls, rich purple.
- „ Rebecca.—Standards, primrose-bronze; falls, intense crimson.
- „ Rigolette.—Standards, bronze-yellow; falls, crimson, reticulated with white.
- „ Solomon.—Standards, brown-bronze; falls, rich crimson, heavily reticulated.
- „ Van Geertii.—Standards, purple-bronze; fall, rich crimson, reticulated with white.

- I. squalens.**—venusta.—Standards, bronze-primrose; falls, rich crimson, reticulated with white.
- „ Walneriana.—Standards, bronze-purple; falls, purple, upper part reticulated white and bronze.
- „ Walter Scott.—Standards, bronze-yellow; falls, rich brown-crimson.
- I. variegata (Bot. Mag.).**—Standards, rich yellow; falls, rich crimson-brown.
- „ Abon Hassan.—Standards, fine clear rich yellow; falls, yellow, mottled with crimson-brown.
- „ Adonis.—Standards, chrome-yellow; falls, crimson-brown, reticulated with white.
- „ Alcibiades.—Standards, yellow; falls, velvety crimson.
- „ angustissimus.—Standards, rich golden yellow; falls, velvety crimson-brown.
- „ Bergiana.—Standards, rich yellow; falls, very rich crimson-brown.
- „ Chelles.—Standards, rich yellow; falls, crimson-brown, heavily reticulated with white and yellow.
- „ Czarewitch.—Standards, fine chrome-yellow; falls, crimson-purple.
- „ De Bergii.—Standards, sulphur-bronze; falls, velvety crimson, mottled with white.
- „ Dr. Bersine.—Standards, chrome-yellow; falls, white and crimson mottled.
- „ Honourable.—Standards, deep yellow; falls, crimson-brown, reticulated with yellow.
- „ Humboldtii.—Standards, yellow; falls, velvety crimson-brown.
- „ Louis de Cerise.—Standards, light yellow; falls, crimson-purple, reticulated with yellow and white.
- „ major.—Standards, rich deep yellow; falls, crimson-brown, reticulated with white.
- „ Malvina.—Standards, yellow, tinged with bronze; falls, brown and white, mottled.
- „ Mexicana.—Standards, fine chrome-yellow; falls, crimson, reticulated with white.
- „ Mimico.—Standards, rich yellow; falls, rich crimson-brown.
- „ Minnie.—Standards, orange-yellow; falls, crimson-brown, reticulated with white.
- „ multicolor.—Standards, rich deep yellow; falls, crimson-brown, mottled with yellow.
- „ Orphee.—Standards, rich yellow; falls, white and crimson reticulated.
- „ Prince of Orange.—Standards, orange; falls, crimson-brown, mottled with white.
- „ Samson.—Standards, yellow; falls, crimson, mottled with white.
- „ Sans Souci.—Standards, orange-yellow; falls, crimson, reticulated with yellow and white.
- „ spectabilis.—Standards, yellow; falls, rich velvety crimson.
- I. aurea (Rob. Regel).**—Standards and falls, rich yellow.
- I. flavescens (Sweet).**—Standards, primrose; falls, light primrose.
- „ Munite.—Standards, primrose; falls, primrose, reticulated with lavender.
- I. florentina (Reich.).**—Standards, white; falls, white.
- I. lurida (Reich.).**—Standards, bronze-purple; falls, rich purple-crimson, richly scented like elder.
- I. subiflora (Bot. Mag.).**—Standards and falls, very rich deep purple.
- I. sambucina (Bot. Mag.).**—Standards, lilac-bronze; falls, rich purple-crimson, richly-scented elder.
- „ major.—Differing from the above in height. PETER BARR.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Japanese Primroses (P. japonica).—My Japanese Primroses, which have been so fine this year (see p. 16), are all in the open air, and much admired they have been.—ANNIE OWEN.

Evening Primroses (E. oenotheras).—These have been very fine with me this season. *E. anisodonta* is more than 2 feet high, and flowering profusely; the blossoms are nearly 5 inches across. Of the white flowering prostrate kinds, *taraxacifolia* and *eximia* are the best, and the latter has the advantage of being perfectly hardy. *Marginata*, though very distinct, is poor compared with either of these. Of the large, yellow-flowered kinds, *missouriensis* is excellent and quite hardy. *Lamarckiana* is a fine biennial species which sows itself freely, but it is too large for small beds.—J. WHITAKER.

Bedding Geraniums.—Dr. Denny and myself are anxious to get up some good prizes, open to everyone, for bedding Geraniums, subject only to the condition that the raiser's name be attached to each plant. Will any of my friends assist us? Any contributions to this object will be gladly received by me, and the names will be published in the papers. We are each prepared to give five guineas, and any assistance will be welcome. Our object is to gather together all the best varieties in the country, so that all may have an opportunity of seeing which are the best worth cultivation.—J. K. PEARSON, *Chilwell*.

Fuchsias in Ireland.—A correspondent of one of the daily papers speaks of the astounding luxuriance of the old red Fuchsia in Ireland, near Carlingford Bay. It assumes the proportions of trees, mounts above the eaves and chimneys, and shades the windows with big clustering sprays of tiny dark green leaves and deep scarlet waxen bells. Many of these shrubs must be of patriarchal age, for their trunks are gnarled and tough as Oak; but the older they are the more determined is their perseverance in showering around an exhaustless wealth of hardy grace and colour. In one or two instances the dwellings were completely hidden and turned into bowers by this quaintly beautiful plant or tree. This sight may be seen at or near the village of Dunavan.

THE INDOOR GARDEN.

HYMENOCALYX UNDULATA.

THE genus *Hymenocalyx* was founded by Herbert, who separated it from the genus *Pancratium* of Linnaeus. The species which forms the subject of this note (*H. undulata*, Herb., *Pancratium typhyllum*, Wild.) is a native of Caracas, New Granada, and is one of the handsomest stove-plants in cultivation. From an elongated bulb it sends up a stout compressed scape or flower-stalk, about 1½ feet high, terminated by an umbel-shaped inflorescence, at the base of which are numerous scarious bracts of a greenish-white colour. The flowers are tubular, very fragrant, about 6 inches long, pure white, slightly greenish at the ends of the petals, which are five in number, linear in shape, reflexed and twisted, and from 3 to 4 inches long. In the centre of each flower is a shallow cup, from which issue six long stamens. The leaves are radical, persistent, stalked, oval-elliptical in shape, and a foot or more in length; leaf-stalks, winged, and sheathing the flower-stem. This very striking plant, the habit of which is well shown in our illustration, deserves more attention than it appears to



Hymenocalyx undulata.

receive at present. It is easily multiplied by separation of the young bulbs, which should be taken from strong plants, after they have done flowering. It may also be multiplied by means of the suckers which the plant frequently produces. W. M.

NEW TUBEROUS ROOTED BEGONIAS.

A FEW years ago Messrs Veitch & Sons, introduced to our gardens three or four species of *Begonia*, distinct in character and very beautiful; and when it was found that they, or at least one or two of them, were hardy enough to stand considerable exposure without harm, their value was materially increased. One was *Begonia boliviensis*, a bulbous-rooted type, from Bolivia; the foliage light green and the flower: bright glossy red, very freely produced, generally in pairs, but sometimes in whorls of three. *B. Pearcei* has much distinctness of character, having handsomely shaded light olive-green leaves, and large bright yellow flowers, produced singly, and occasionally in pairs. *B. Veitchii* was found near Carzo, in Peru, and it has immense blooms of a vivid vermilion or cinnabar red; and, having been discovered at an elevation of upwards of 12,000 feet, it has proved in this country sufficiently hardy to stand the winter without injury. These imported forms were found to seed freely, and by cross-

ing them a progeny has resulted, partaking of the characters of all the foregoing, and so good as to demand the attention of all lovers of flowers. The blossoms are of all shades of scarlet, from yellow to carmine, and from pink to crimson. They are not in the hands of one or two men only, for, as usually happens, many have tried their hands at cross breeding; and batches of new *Begonias* are as common as new bedding *Geraniums*, *Dahlias*, &c. Some of the earlier hybrids were *Chelsoni*, *Intermedia*, *Sedeni*; and then from these have sprung a very large progeny. If I were disposed to recommend a few, in order to lay the foundation of a collection, I should name *Carminata*, *Carnea splendens*, *Dr. Masters*, *Brilliant*, *Dazzle*, *Rosea alba*, *Gem*, *Glimmer*, *Lothair*, *Mazeppa*, *Meteor*, *Surprise*, and *Trojan*. When the plants have done blooming, and the foliage decays—for this race of *Begonias* are all of a deciduous character—the plants should be allowed to dry off; the soil should be shaken from the roots, and these should be put away to winter in a dry place, as one would *Dahlias*. In early spring they can be potted and grown on for the summer display. It will thus be seen that their cultivation is within the reach of anyone having a fitting place to flower them in; and there is reason to believe that, like *Begonia Weltoniensis*, many of them will make most acceptable window plants. R. D.

Plants for Screens.—What plants are best to use for a wicker screen, in front of which is a long trough for flowers, about a foot and a half deep? I want it to look bright and gay all the winter. —K. B. [Nothing makes a screen so good and pleasing as the common Irish Ivy. Besides its great lasting properties, it may be tampered with at the roots more than anything else will stand. If the trough of the screen is wide enough at the time the Ivy is planted, place in the soil, in front of the Ivy plants, a row of empty pots, so that you can introduce any sort of variegation you like by changing the empty pots for the full ones, or flowers may be used; but, as you will see, the pots give a chance of more variety all the year round. Some of our screens are only 1 foot wide in the trough, yet they are in beautiful order after a service of twenty years, although a row of 32-sized pots takes up so much of the Ivy's root space.—J. FLEMING, *Cliveden*.]

Palms for Market.—Palms always command a sale and realise good prices, being, as they are, alike suitable for the decoration of halls, windows, or the dinner-table. Foremost amongst market Palms is the *Livistona borbonica*, a kind which is raised from seed in large quantities, and which is in good saleable condition at two, three, and four years old. *L. altissima* is certainly in greater demand than *L. borbonica*; but it is seldom to be met with in the market on account of the difficulty experienced in obtaining seeds of it from which to raise young plants in quantity. *Rhapis flabelliformis* is another good market Palm, and, when grown to the height of 2 or 3 feet, it has a graceful tree-like appearance. Like the last, it is always scarce and dear on account of the difficulty experienced in getting seeds of it. Such plants of it as make their appearance are usually the produce of offsets or suckers. The *Rhapis*, when sent to market, has never more than one stem, but, if necessary, it might be grown so as to have scores of stems like the specimens of it in the Palm stove at Kew. *Corypha australis* is another common market Palm, and also a desirable sort on account of its hardy constitution, as well as its neat appearance.—Q.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Dolichadeira (Gloxinia) tubiflora.—This is a useful decorative plant when grown in small pots and flowered in a young state. It has oblong crenate, rather hairy, leaves, and bears pure white flowers on stems from 12 to 18 inches in height. The individual flowers are 4 or 5 inches long, and last a long time in perfection. It grows well in a moderately warm greenhouse or plant stove, and is readily propagated, with ordinary care and attention, either by means of cuttings or seeds.—B.

Fine-leaved Plants for Cool Greenhouses.—I should be obliged to you, or any of your readers, for a list of plants with fine foliage or habit which will grow in a greenhouse.—S. G. [*Aralia Sieboldi*, *Dracaena australis*, *D. indivisa congesta-rubra*, *Araucaria excelsa*, *A. columnaris*; the *Fan*, *Date*, and *Chusan* Palms; common *Maize*, *Rhapis flabelliformis*, *Musa superba*, *Cannas*, many fine *Solanums*, *Fassion*-flowers, *Ficus elastica* and others; *Phormium tenax*, *P. Cookii*, *Yucca aloifolia*, *Y. filamentosa*, and *Y. filifera*.—Ed.]

Goodyera Dawsonii.—It may interest some of your readers to know that this plant will make a vigorous growth in a cool humid shady greenhouse during the summer months. In habit and flowers it resembles *G. discolor*, but the leaves are lined with bronze-coloured streaks, and are of a fresher green. I recently saw a fine plant of it growing under the above conditions in Mr. Ley's nursery at Croydon, and it was in the most luxuriant health, notwithstanding that the plant had had repeated overhauls at the hands of that merciless operator—the propagator.—B.

THE SHAKESPEAREAN GARDEN.

THE celebrity of several of Shakespeare's plants dates from the earliest ages of literature; the sweet and immortal fame of others began with himself. To the latter class belong the Cowslip and the Daffodil, the Harebell, Hawthorn, and the Pansy; Lavender also, Ferns, Furze, and many besides. To the former, or the ancient, belong the Rose, the Lily, the Violet, and the Poppy; among trees, the Pine and the Oak, the Cedar, the Cypress, and the Willow; and of miscellanea, Reeds, Sedges, Darnel, Briars, Rosemary, &c. Of course these lists are not exhaustive, but they will serve to indicate under what very different associations the history of the several plants has to be contemplated. That the plants allow of being thus marshalled is a fact very important to notice, since many of the names commonly employed in classical verse became in subsequent ages stereotyped metaphors with mere rhymesters. The plants and flowers in question came to be cited much in the same way as the pearl and the emerald, the deserts of Africa, and similar phrases. Sometimes, no doubt, they were spoken of from personal knowledge—far more frequently, it is quite certain, they were cited only at second-hand, on the strength of the reputation already acquired. The mention of the Rose may be assumed, perhaps, to have been always or usually genuine, this flower having been so generally cultivated; so, probably, may be regarded the mention of the Oak, at all events by English authors. But I very much doubt if with the great mass of the writers who have introduced the Lily into their verses, there has been one in a hundred who has known more than that it is a kind of beautiful white flower, proper, and orthodox, and poetical, to praise, and to use as an image of the fair and queenly. Whether it has three petals or four, whether it blooms in May or September, whether it grows singly or in clusters, would be questions that very few could answer correctly, if at all; those who are most prone to employ such terms are very generally the most deficient in practical knowledge of the things themselves. Shakespeare, on the contrary, scarcely ever used an old-established botanical simile without proving to us, at the same moment, that he knew the plant; with him, therefore, the simile was essentially, and to all practical ends, original. Authors in general are distinguished by casting their light sideways. In Shakespeare we get not only the sideways, but there shines upon us at all times that strong and unmistakable vertical light which declares the master; one who speaks with authority, and not as the scribes. While, moreover, he shows us, by the way in which, for his own part, he introduces the Rose and the Lily, the Oak and the Pine, that, although employing the ancient images, he has found them for himself; he vindicates his independence of the authors who had gone before by adverting to things they never mention, and in the same consummate manner. It is this last which gives energy to his allusions. Many an author mentions a thing for the first time, but for it to step forth like one of the goddesses in Homer is quite another matter. Shakespeare was not only no copyist of the old-accustomed imagery, or such as had been employed by Ovid and Virgil; but, through possessing so much eyesight of his own, so much of that sweet aptitude to observe for one's self, which is better than any amount of mere capacity for echo and reverberation, however timely, he perceived everything that *they* saw, and along with it a great deal more. With *him* blossom the Cuckoo-flower, long Purples, the Crown Imperial; he talks of burnet and of pig-nuts, the common things of the world, which, along with its *bijouterie*, are, after all, the least familiar to people in general; for seeing is, in reality, one of the fine arts; the principles may come by Nature with most or all of us, but it is only here and there that seeing is really exercised. Had his attention been specially drawn to plants, by any accident of abode or surroundings, no doubt he would have told us of many more. It does not matter. Perhaps we are best off as we are. An excess of botany would have done nothing more for his reputation than the agreeable and temperate sprinkling he has given us, and which is still so grand an illustration of his independence and originality. The way in which the botany comes in always seems to me like his allusions to the tales and impersonations of the Greek mythology; we have plenty, without plethora, enough to show the vast compass of his

acquirements; yet nothing is ever intruded or present without a good reason, and whatever does come, comes gracefully. It is in these latter qualities that we find so much of the secret of his wonderful harpooning power. We feel that in his allusions to trees and plants there is scarcely ever anything but what he got out of Nature as a *bonâ fide* disciple. Instead of glittering crystals, hard and mathematical, dug from the mines of ancient Greece and Rome, such as cover the pages of most of his cotemporaries, and such as are constantly being employed even in our own day, we have the warm sweet fluent reality that pertains to life. In some few cases, without question, his allusions are of the crystalline class. That he got his idea of the Cedar, for instance, from earlier writers, possibly from scripture, and mentioned it because they had done so, must be conceded on the instant, since this tree was not brought to England till many years after his death, or in 1683. The Cypress he may possibly have seen, the introduction of the latter having taken place in 1548, and possibly he may have seen the Myrtle, which shrub was brought from Spain during his lifetime, at the same period as the Orange tree, by Sir Walter Raleigh and Sir Francis Carew. I am inclined to think, however, that his allusions to both plants were founded on hearsay, or, like those which he makes to the Cedar of Lebanon, adaptations of what he had learned from the literature of a remote age.

Another very important matter in regard to the botanical images and comparisons employed by the poets, and which it may be well here to point out, is that in ancient times names held a breadth of significance very different from the precise meaning which to-day is very properly confined to them. That collectiveness should have characterised the ancient nomenclature of plants and trees, is in no degree surprising. Exact ideas as to botanical affinity the ancients were quite devoid of. They grouped things on the most feeble points of resemblance. Because the *Acanthus* was a thorny plant, the name was extended to the *Acacia*, and to the *Whin*; while *Robur*, which was emphatically the *Oak*, applied to any of the *Cupuliferæ* that were of immense bulk and stupendous age. Relics of this ancient practice survive to our own day, as will be illustrated by-and-by, under particular heads. Here it is needful only to say that Shakespeare is absolutely free from the errors which arose on the supposition that *Lily* always meant the *Lily*, *pur et simple*, and that by *Acanthus* was always intended the leaf which gave to *Callimachus* the first hint of the *Corinthian capital*.

The Rose.

"Rose," in its primitive form, is a name of unfathomable antiquity. It belongs to the wide-spread Indo-European family of words which includes our own "red" and "ruddy"—the Latin *rutilus*, and the Greek *rhodon*, all of which various terms are probably referable to some venerable root-word, born thousands of years ago in fertile and patriarchal Asia, and from which, by slow degrees, they have been derived. The etymological meaning appears to be just that which is expressed in our old-fashioned English "red." Strictly, therefore, to speak of a white Rose is an inconsistency. *Rhodon*, the earliest form preserved in literature, and the first occurrence of which is in Homer's Hymn to *Ceres*, whatever it may have designated in the beginning, in course of time became the appellation of red-hued flowers in general, and as red flowers are the most showy and conspicuous of any, it very naturally became extended therefrom to flowers of all descriptions, whether red, blue, white, or yellow. This is illustrated in that charming passage in *Pindar*, when, after comparing domestic trouble and adversity to a wintry snow-storm, he exclaims, "But now this happy household, like the earth, has blossomed with purple Roses."* The epithet "purple," it will be remembered, was, with the ancients, the designation not only of a particular colour; it also denoted bright, luminous, or effulgent, and in the latter sense it is that *Pindar*, so renowned for his picturesque figures, employs it in the verses quoted. *Virgil* uses it in precisely the same sense, *ver purpureum*, "shining spring,"† and elsewhere applies it to the white *Narcissus*, one of the most lucid of white flowers.‡ *Horace* gives it, in the same fashion, to the *swan*.§ Many passages

* *Isth.* iii. 30. † *Ecl.* ix. 40. ‡ *Ecl.* v. 38. § *Odes* 4 l. 10.

might be quoted to show that with the ancients Roses often signified flowers in general. One of the prettiest occurs in the episode where we have the bevy of little maids at play upon the shore, delighting in the sound of the dimpling sea, their companion, the daughter of Telephassa, who presently is borne away by the snow-white bull, meantime "culling Roses."* The Egyptian Water Lily, the superb Nelumbium of modern botany, bore, for one of its names, the "Rose of the Nile," and it scarcely needs to be remarked that to this day we speak of the crimson Poppy among the cereals as the Corn Rose, of the lilac field Scabious as the Gipsy Rose, and of the white Hellebore of mid-winter as the Christmas Rose. A beautiful Mallow is called *Hibiscus rosa-sinensis*; the Camellia is with many the Japan Rose. We have also the Rock Rose, the Guelder Rose, and the Rose of Barbadoes. It certainly is very interesting to note, as an illustration of how the ideas of redness and of flowers go hand-in-hand, that the epithet applied to a deep-coloured or rosy human countenance is "florid" or "flower-like." It may be interesting, also, to point out that what is true of the Greek *rhodon* is true in other and very different languages. Metaphor, in its principles, is everywhere alike, because founded upon the natural harmonies of things, and whatever "rose" may denote figuratively in one language, its equivalents will denote the same elsewhere. In the Persian language the word for red is *gul* or *ghul*. Thence, on the repulsive side, comes ghoul, the eater of blood, as in the "Arabian Nights;" while, on the pleasing one, it signifies both a Rose and flowers in general. Gulnare, that beautiful feminine name, so common with the Arabs, is their word for the Pomegranate blossom, and the oriental equivalent of our loveable English "rosy-cheeked." Gules, the term for red in the heraldry of the Crusaders, is the same original word over again.

At what period the precise word *Rosa* was contrived, or when it first came to denote the Rose specially so called, is not known. The earlier Romans seem to have used *Rubus*, a name subsequently transferred to the Bramble. The species which, in the times of their pride and luxury, they so highly valued, and respecting which so many incidents are mentioned in history, to say nothing of the allusions made by the poets, would seem to have been the incomparable Centifolia, commonly called by the ugly name of the Cabbage Rose; the Damask or Damascus Rose, and, probably, also the African Musk Rose, and the Gallica. Descriptions more or less accurate are given by the naturalists, but which of them filled the famous gardens of Pæstum, remains a pure matter of conjecture. Pæstum, the Poseidonia of its Greek founders, was a delightful locality to the south of Naples, on the gulf of the same name, and was celebrated, not only for the abundance of its Roses, but for their blooming twice a-year. There is no evidence either as to the date of their first appearance in England, though, unquestionably, it was very early. Some of the varieties have probably been in British gardens ever since the occupation by the Romans. When they took their departure the plants would be cherished where so many other things found a refuge during the dark ages, within the precincts of the monasteries, and there the modern pedigree may be said to begin. All four of the species that have been named were known, in all likelihood, to Shakespeare. If there be a doubt as to either it will attach to the Gallica.

The Centifolia, the first and most renowned of the four, is well distinguished by its large and cernuous flowers; the large, unequal, and curving prickles, the clamminess of the calyx, and the concavity of the petals, which remind one of some of those lovely shells we see strewn upon the "yellow sands." The fruit, also, is characteristic, being oblong or rounded, but never elongated; the leaves, again, are large, compared with those of other common species of Rose, and the height, in full-grown plants, is 5 or 6 feet. The name is apparently an adaptation of the ancient one bestowed by Theophrastus, whose hecatophyllon or Hundred-leaved Rose grew abundantly in the neighbourhood of Philippi. This plant is probably intended also by Herodotus, in his reference to a Rose indigenous to Macedonia, which had sixty petals, and was remarkable for its fragrance. Whether indigenous or not to south-eastern Europe, there seems to be no doubt that

this lovely plant occurs truly wild in certain parts of the Caucasus, where it was noticed by Bieberstein, sometimes with double flowers, and whither it was not likely to have travelled from a garden. This was the Rose, *par excellence*, in ancient times; the Rose which the Greeks dedicated to Aurora, as an emblem of youth, because of its freshness and reviving fragrance; to Aphroditë, as an emblem of love and beauty; and to Eros, as a symbol of fugacity and peril; the charms of love, though so full of allurements, being transitory, and thorns being inevitable. The restless little deity, says the legend, gave one to Harpocrates, the god of Silence, to imply that love is not for disclosure, wherefore the gift of a Rose to this very day, when we wish to impose secrecy, and the celebrated phrase "under the Rose." This is the beautiful flower which, according to the author of the "Episodes," is unvisited by any insect, except that large, handsome, shining, green and golden beetle, the *Cetonia aurata*, in the south of England called the goldsmith. This, too, is the flower which in respect of its equal charms, whether in bud, or fully open, is unique. With the ancients, Roses, while unexpanded, were so much admired, that it was sufficient to speak of them as "buds." Theocritus calls them simply calyces, or flower-cups.* In Shakespeare we have that beautiful passage, where the unhappy Constance says to her boy, the pride and joy of her heart, ill-fated little Arthur:—

But thou art fair, and at thy birth, dear boy,
Nature and fortune joined to make thee great.
Of Nature's gifts thou may'st with Lilies boast,
And with the half-blown Rose.†

This one again, the Centifolia, is assuredly the flower intended in that most lovely picture of premature winter, when

Hoary-headed frosts
Fall in the fresh lap of the crimson Rose;‡

and which, in another place is intended to suggest the idea of a smiling female countenance, when, at all events to the lover, it

Looks as clear
As morning Roses newly washed with dew.§

In regard to the same, come the immortal lines spoken by Juliet:—

What's in a name? That which we call a Rose
By any other name would smell as sweet.
So Romeo would, were he not Romeo called,
Retain that dear perfection which he owns
Without that title.||

And, by and bye, in the same tragedy, when the operation of the sleeping-draught is described to her by Friar Laurence, comes in all its warmth the sweet old metaphor, as old, at least, as the time of Theocritus, in whose twenty-third Idyll we have "rosy-cheeked":—

The Roses in thy lips and cheeks shall fade
To pearly ashes.¶

I cannot but think that it was the Centifolia which Shakespeare had in his mind also when Laertes addresses Ophelia as "O Rose of May!"*** The association was not with the May of the calendar, but with the early summer of woman's life, when her cheeks as well as her hopes are clad in roseate. Would that all our young ladies would receive the truth that rose colour is only oxygen in another shape, and that cheeks get it best where the flowers do—out of doors. The Centifolia was at one time called the Provins Rose, whence Miller's name of *Rosa provincialis*. It is under this name that Shakespeare alludes to the ribbon rosettes worn by players as ornaments to the shoes.†† The same species has furnished the beautiful variety so much valued as the Moss Rose.

The Damask Rose is distinguished by its pale green, far-apart, pubescent leaves; the greenness of the bark upon the shoots, the long, reflexed sepals, and the elongated fruit. In colour it is exceedingly brilliant; wherefore in Pliny, who calls it *Rosa Milesia*, it bears the happy epithet of *ardentissima*, "very burning."‡‡ As implied in the name, it is a native of Syria, where it attains the height of 8 feet. Shakespeare

* Idyll, iii. 23. † King John, iii. 1. ‡ Midsummer Night's Dream, ii. 2. § Taming of the Shrew, ii. 1. || Romeo and Juliet, ii. 2. ¶ Ibid. iv. 1. ** Hamlet, iv. 5. †† Ibid. iii. 2. ‡‡ Lib. xxi., cap. 10.

* Moschus, Idyll, ii. 35-36.

evidently knew it well, delighting especially in the deep rich colour of the petals.

She never told her love,
But let concealment, like a worm in the bud,
Pine on her damask cheek.*

So again in Phebe's description of the Shepherd:—

There was a pretty redness in his lip;
A little riper and more lusty red
Than that mixed in his cheek.
'Twas just the difference
Betwixt the constant red and mingled damask.†

"Mingled damask" seems to refer to the admixture in the cheeks of different shades of their natural hue, such as never occur in the lips, the colour of which is uniform.

The Musk Rose is told quite as easily as the preceding, being a plant of very rambling habit of growth. The branches, which are often 10 or 12 feet long, are too weak, as a rule, to rise or stand without assistance from kindly neighbours. The flowers are produced in large umbellate clusters, which arise from the extremities of the branches; the petals are pure white, but there is a variety in which they are delicately tinged with blush. The musk-like perfume is very perceptible, particularly in the evening, and coming chiefly at this hour, in connection with the purity of the white, we need not wonder that the flower recommended itself to poetry and to Shakespeare. Mark the taste with which he connects it exclusively with Titania and the fairies, the only play in which it is mentioned being the *Midsummer Night's Dream*, where we find it, on three separate occasions. Musk Roses lay upon her couch; they are the same with which she proposes to adorn the head of Bottom; and a part of the duty of the attendants is to "kill cankers in Musk Rose buds."‡ This exquisite species, which in the wild state extends all across the African continent from Egypt to Mogador, occurring also in the island of Madeira, assuredly deserves to reckon with the most delightful of the old English Roses. Quite uncared for by modern connoisseurs, it is prized in many a cottage and farmhouse garden, and ought to be found in many another, if only because it was one of Shakespeare's flowers. I take it to be the Rose which Virgil intends in his description of Venus, when "turning about, she gave a bright display of her rosy neck."§ Shining whiteness of the neck being appropriate to a goddess, and the idea of redness absurd.

The Gallica approaches the Centifolia, but has coriaceous leaves and nearly globular fruit; the flowers, also, are borne differently, being nearly or quite erect. No specific mention of this one appears to occur in Shakespeare; the plant is interesting, however, as being the parent of that curious and interesting form with variegated petals, called the "York and Lancaster." The variety in question appears to be comparatively modern, not being mentioned by Gerard; nor even, at a later date, by Parkinson. The assumption of the red and white Rose respectively, as badges of the houses of Lancaster and York, took place in the Inner Temple Gardens; so, at least, it would appear from the scene in Henry VI., which depicts the quarrel between the famous rivals:—

This brawl to-day,
Grown to this faction, in the Temple Garden,
Shall send, between the red rose and the white,
A thousand souls to death and deadly night.

The above are by no means the whole of the Shakespearean allusions to Roses, but they suffice to illustrate their temper.

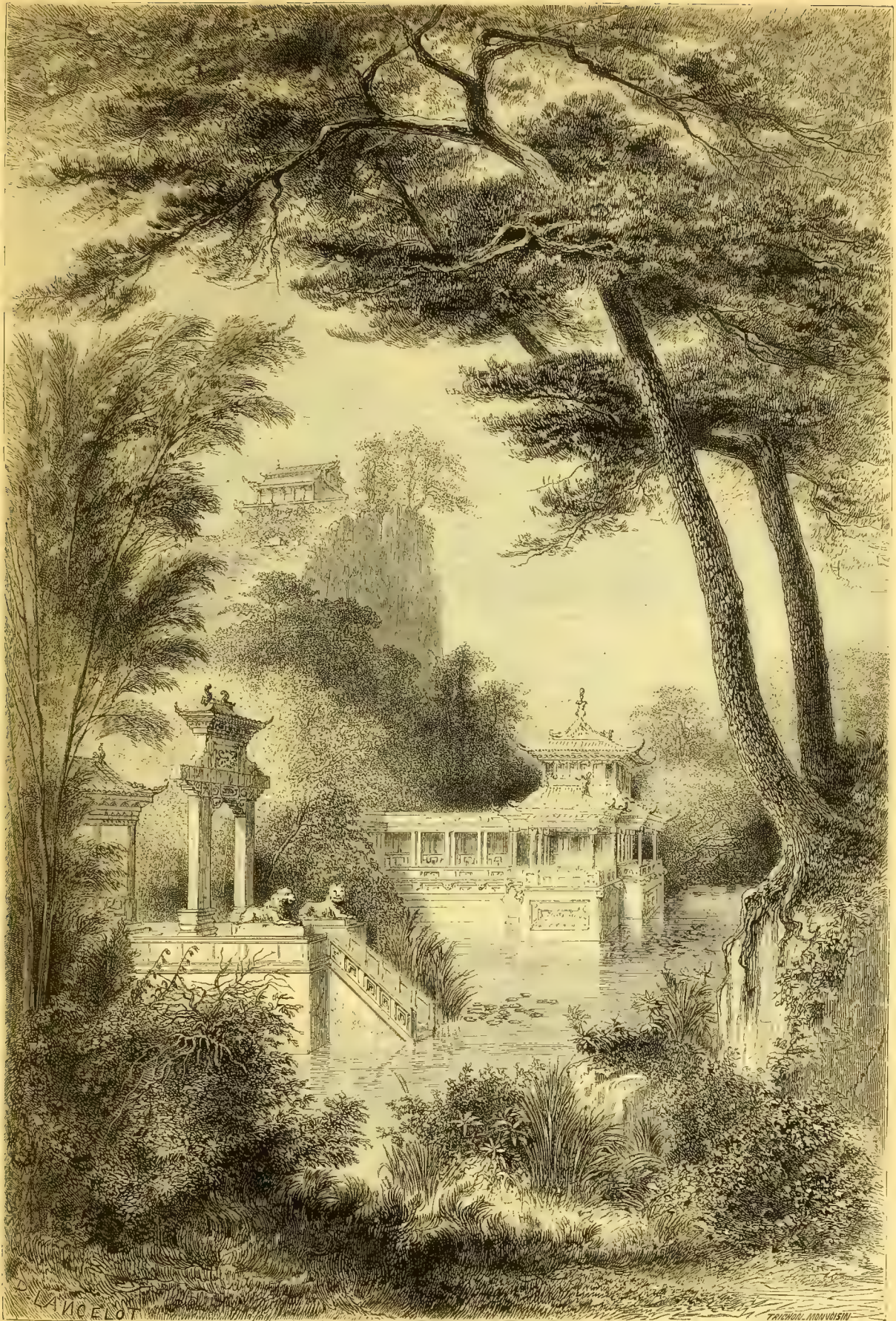
G.

The Common Puff-ball in its Mature State.—I send you a morsel of Fungi, taken from a huge specimen found at Innerleithen, filling a vacuum amongst large stones, and entirely covered with soil. Had space admitted development, it is impossible to say what size it might have attained.—J. Muir, *Clovenfords*. [Reply by Mr. Worthington Smith:—All Puff-balls ultimately dry up into a dusty mass of threads and spores; the Fungus referred to in this note is the Giant Puff-ball (*Lycoperdon giganteum*), and the specimen enclosed belongs to that species in its ultimate dusty condition. This stuff used to be employed as tinder by country folks, and is now often used to assuage bleeding.]

* Twelfth Night, ii. 1. † As you like it, iii. 5. ‡ *Midsummer Night's Dream*, ii. 2, ii. 3, iv. 1. § *Æneid*, i. 102. || Act ii. scene 4.

CHINESE GARDENS.

GARDENING has been studied and practised by the Chinese from time immemorial, and many of our most beautiful decorative trees, shrubs, and flowering plants have been derived from China, the gardens there being very rich in variegated plants, and especially in dwarfed and double flowered forms of vegetation. Nearly a hundred years ago the skill and enterprise of Chinese gardeners attracted the attention of Sir William Chambers, one of the most noted landscape architects of the time. Speaking of their gardeners, he says:—"Far from being either ignorant or illiterate, they are men of high abilities, who join to good natural parts most ornaments that study, travelling, and long experience can supply them with. It is in consideration of these accomplishments only that they are permitted to exercise their profession; for, with the Chinese, the taste for ornamental gardening is an object of legislative attention; it being supposed to have an influence upon culture in general, and consequently upon the beauty of the whole country. They observe that mistakes committed in this art are too important to be tolerated, being much exposed to view, and in a great measure irreparable, as it often requires the space of a century to redress the blunders of an hour." We are told that their spring scenes "abound with evergreens, intermixed with Lilacs of all sorts, Laburnums, Limes, Larches, double-blossomed Thorn, Almond and Peach trees, with Sweet Briar, early-flowering Roses, and Honeysuckles. The margins of thickets and shrubberies are adorned with wild Hyacinths, Wallflowers, Daffodils, Violets, Primroses, Polyanthus, Crocuses, Daisies, Snowdrops, and various species of Iris, with such other flowers as appear in the months of March and April." In addition to these glimpses of early beauty, their summer scenes are said to "compose the richest and most studied parts of their gardens, and are formed by grouping nearly every fair deciduous flowering plant and shrub that will grow in the climate, all uniting to form the finest verdure, the most brilliant and harmonious colouring imaginable." Their autumn scenes are said to consist of many sorts of Oaks, Beech, and other noble deciduous trees that are retentive of leaf, and that afford, in their decline, a rich variegated colouring, with which they blend evergreens, fruit trees, shrubs, and flowers that blossom late in the year. Even during the winter months a pleasing effect is obtained by grouping Pines, Firs, Cedars, evergreen Oaks, Phillyreas, Hollies, Yews, Junipers, and many other evergreens, these groups being further enriched by a judicious use of Laurels, Laurustinus, Arbutus, and other plants of distinct habit that will flourish out of doors during the colder part of the year; and, in order to give variety and interest to the winter scenery, we read that they plant many of the rare shrubs, trees, and flowers of the torrid zone, which they cover during winter with glass frames, warmed by subterranean fires or other artificial means—a circumstance which shows that geothermal culture was not unknown in China a century ago. Our illustration owes its attractiveness mainly to the artistic disposition of the rock-work and water—garden embellishments well understood by the Chinese. On the rocks are planted many "kinds of Grass and creepers, and shrubs which thrive in such situations, together with Mosses, ground Ivy, Ferns, Stonecrop, and various other sorts of Sedum, Houseleek, Cranesbill, rock Roses, and Broom, with Birch and other elegant trees that root into the crevices and assist in draping bare surfaces in an effective manner; while, on the summits, are placed hermitages and temples, to which one ascends by means of rugged winding steps cut in the face of the rock." These hermitages are not always useless accessories; on the contrary, they frequently afford shelter to aged and infirm gardeners and other dependants of rich mandarins; who, instead of being turned adrift when unable to work, are here allowed to end their days in peace and comfort, surrounded by scenes with which they have, in most cases, been associated from childhood. Water forms a prominent feature in nearly all the best Chinese gardens; indeed, Chinese artists assert that no garden, particularly if it be extensive, can be perfect without it. Its extent is generally cleverly concealed by means of various devices, such as the introduction of islands and groups of trees. The trees used for such purposes are the slender silvery-barked Birch, columnar Poplars and Cypress, Laburnums, Larch, or Weeping Willows, the pendent



A MODERN CHINESE GARDEN.

branches of which frequently dip down gracefully to the very water's edge. There are few countries in which greater diversity of trees, shrubs, and smaller decorative plants are cultivated in the open air than in China, a circumstance partly due to the fine inter-tropical climate possessed by the southern provinces, and partly to the skill and enterprise of the Chinese gardeners, who employ every distinct and beautiful plant obtainable, in order to form the scenes to which we have just alluded. In the more extensive of these gardens even some of the effects of woodland scenery are obtained by massing Oaks, Elms, Beech, Tulip trees, Planes, Maples, and Sycamores, Walnuts, and Limes, which form bold rounded masses of varied tints; and with these are judiciously contrasted striking columnar Poplars, Conifers, and other trees of a spiral kind, so as to vary the outlines and add variety. Even herbaceous plants are arranged so as to form a series of little scenes or pictures on the outskirts of borders or plantations of hardy shrubs, instead of being indiscriminately planted in strips without any special object in view. It is stated, indeed, that the best Chinese gardeners dispose of them with great circumspection, and "paint their way very artfully" along the borders in which they are planted. They reject all plants of very straggling growth, harsh colours, and poor foliage, choosing only such as are of some duration, either in large or in picturesque masses, or such as are either graceful in form, with fine foliage, or of tints that harmonise with the colours and bright green foliage with which they are associated. In the culture of tender pot-plants for the decoration of temples and apartments, few cultivators excel the Chinese. Decorative plants are largely used in their various temples, especially during the ceremonies which take place at the new year. These include Chrysanthemums, Narcissus Tazetta, Dielytras, and scores of other plants. In few other countries of the east is the soil so well cultivated as in China, and wherever the Chinaman emigrates, he is found to turn his cultural proclivities to good account; nowhere is this seen to better advantage than in San Francisco, Chicago, and other cities of the United States, to which, of late years, Chinamen have flocked in large numbers. F. W. BURBIDGE.

Dangstein.—The best private collection of rare plants I have ever seen is at Lady Dorothy Neville's, at Dangstein. I went there with a party of friends a few days ago, and was perfectly charmed with the beauty of the place and the numerous curious specimens to be found there. Wonderful Ferns from all quarters of the globe, exquisite Pitcher Plants, singular Orchids of great value, Tea, Coffee, and Croton-oil plants, the Lattice Leaf plant (*Ouvirandra fenestralis*), and a marvel of a terrestrial Orchid belonging to the *Anactochilus* family, all attracted my attention so much that I could scarcely be constrained to take a peep at her ladyship's famed silk-worms, feeding on their favourite food, the leaves of the *Ailantus* tree. Of one thing I feel certain, that the Silkworm cannot, at least in the caterpillar state, have a keen sense of smell, otherwise, the odour of these leaves would dismay it. Truly, the grounds, gardens, and various houses at Dangstein are well worth a visit.—HELEN E. WATNEY, *Berry Grove, Liss.*

Death from the Sting of a Hornet.—The deputy coroner for the Reading Division of Berkshire has held an inquest at Mortimer, a village near Reading, touching the death, under extraordinary circumstances, of Mrs. Sarah Merrett, a labourer's wife. Deceased was standing in the road near her house when a hornet flew out from a nest in the bank and stung her on the right side of her neck. She went indoors, and a neighbour bathed her neck with water and vinegar. However, she fainted almost immediately and expired in a few minutes, before a medical man could reach the house. Mr. G. H. Davis, surgeon, stated at the inquest that he knew Mrs. Merrett as a nervous, excitable woman, and he believed the immediate cause of her death was syncope, the result of a nervous shock caused by the sting of the hornet. The jury returned a verdict in accordance with that opinion. Deceased was fifty years of age.

Guarana as a Remedy in Cases of Nervous Headache.—Guarana, made from the bruised and roasted seed of the *Panllinia sorbilis*, growing in Brazil, contains an alkaloid allied in character to that found in tea and coffee, and which comes nearer to a specific for sick headache, and any other ill-effects from over exertion, than any remedy I have ever found for any disease, in a practice of over forty years. Taken at the first warning of an attack, it will ward it off entirely in nine cases out of ten, and do more than any medicine I have ever found to prevent its return.—*Cultivator.*

THE FRUIT GARDEN.

FRUIT-GROWING FOR THE LONDON MARKETS.

OF orchards there are but few properly so called in the neighbourhood of London; the large area devoted to fruit tree growing being also used for the production of vegetables. There are, however, a few "Grass" orchards, but these are the exception rather than the rule. The trees, for the most part, are of the old-fashioned large standard kind—in short, regular orchard trees—but as these die out or are removed, they are replaced by young ones, which are, as a rule, more carefully trained. The tall large-headed trees of olden times are giving place to dwarf ones, which not only produce good crops of large fruits, but afford special facilities for gathering the produce, and also permit the ground underneath them to be cropped with better results than in the case of large, widely-spreading trees. Thus, when a failure of the fruit crop takes place, its effects are only partially felt, as there is the vegetable crop to fall back upon. Low-worked, bush-shaped trees are preferable to pyramidal ones, as they are more prolific, and not so subject to the influence of high winds. The last fortnight in July and throughout the month of August (the Apples then usually bending the branches into the form of arches, Pears being found in loads ripe and ripening, and Plum-tree boughs supported with props, in consequence of the heavy crops which they are producing) is perhaps the best time to see fruit trees in market gardens in perfection. Orchards were at one time planted in rows at various distances, varying from 9 to 15 or even 20 feet apart; but in many cases these lines have been much thinned by natural causes as well as by the saw; the blanks thus created having been for the most part planted with young trees that become so choked as to be as short-lived as their ancient neighbours. On the contrary, where entire clearances have been made, and a whole field is planted afresh, no matter whether the distance be 6 or 18 feet from row to row, the trees look thriving and fruitful, and, in excellence, promise to surpass their predecessors. Market gardeners make it a point not to plant the rows of a new plantation exactly in the place which the old ones occupied, but rather between where the old ones grew. Fruit trees are also sometimes planted in lines, so as to form boundaries to quarters or large squares of ground, thus affording shelter to the vegetable crops. A 50-acre piece of excellent ground, quite level, I observed treated as follows:—It was divided crosswise by means of five rows of Pear and Apple trees; between these rows were open fertile spaces for vegetables, the ground thus being cropped up to the base of the trees, which annually bore good crops. Where trees of these kinds are closely planted the vegetables are good. As soon as the leaves have fallen the surface of the ground is cleared of all remains of previous crops, prunings, and similar litter. It is then manured and dug over for Radishes. This crop is partially sheltered in winter by the naked branches, and is removed before the leaves again unfold. Parsley from July sowing, transplanted in autumn under fruit trees, does well, and Mushroom beds bear abundantly in similar positions. Under fruit trees is almost the only place assigned to Wall-flowers and bulbous plants, and there, too, Leeks and early Potatoes are often grown. Sprouting Broccoli, Brussels Sprouts, Spinach, and Kale are the recognised crops for such shady places during the summer and autumn months; and, although it must be admitted that these do not thrive so well as they would do in the open field, yet they succeed moderately well, and amply repay any trouble bestowed on them. Such herbs as Thyme, Mint, and Sage are also often grown under fruit trees. Perhaps the best of all crops for such situations is Rhubarb; plants of it thus placed are usually the first to start into growth; and, under the overhanging boughs, the stalks come up more tenderly than they do in open quarters, but their inferiority in point of colour lowers their market value. Moss Roses, Gooseberry and Currant bushes, are likewise extensively grown between the rows of fruit trees, where, considering their position, they usually yield fair crops; but a great drawback to such intercropping, where the trees are closely planted, is that the drip from them causes a deal of grit to lodge on the berries. Except in the case of young trees, little is done in the way of pruning or training. All the pruning old trees get

merely consists in cutting away annually with the saw all dead or dying limbs, or thinning out some of the worst placed branches, in the event of the tops being too much crowded. Market gardeners dislike hard pruning; still, many of them, although adhering in the main to the old system, use the knife a little, and branch thin the big standards to a greater extent than was wont to be done, and they admit that by this practice better fruit is produced. Although considerable knife pruning is necessary for very young trees, yet, as soon as fruit-spurs are induced and gross growth subdued, hard pruning is gradually discontinued. It is very desirable to have the trees somewhat open in the heart, and the branches well exposed to the sun. In market gardens fruit-tree ground is manured just as heavily as open quarters, if vegetables are to be grown on it, and in winter it is trenched and ridged, or deeply dug up to within a very short distance of the trunks of the trees. This may seem bad practice, and in ordinary cases, doubtless, it would be; but in market gardens deep soil and heavy manuring help to repair the evil. The suckers that spring from the trees are lifted with the roots attached to them at digging time, and are either kept for stocks, or are disposed of to nurserymen or others for a similar purpose. When lifted, they are usually "heeled" in in bundles in a piece of out-of-the-way ground until a convenient time arrives for planting them in rows, when they are trimmed root and stem, and planted in rows 2 feet apart in well-trenched and manured ground; afterwards they are treated as is done in nurseries. During the first, and in many cases the second summers, Spinach, French Beans, Turnips, Cabbages Asparagus, or Beet are sown between the lines, or Seakale is planted there. Here they may remain until fit for grafting, when they are worked some 6 inches from the ground, using grafting clay over the incision, and earthing up sufficiently high to cover the union, so as to keep the clay moist. Sometimes, however, these stocks are grafted some 3 or 4 feet high, and clayed as in the other case; the stocks are then bent on one side, so as to lie near enough to the ground to permit the grafts to be buried in the soil. When the union is considered complete, the soil is taken away, and, after a lapse of some days, the clay is likewise removed. Market gardeners do not, however, raise all their own fruit trees; on the contrary, they obtain their chief supply from nurserymen. Where it is desirable to graft another kind on an old tree, in order to replace a lost limb, or for any other purpose, the part to be grafted is cut back some weeks before "working." During the summer time fruit trees in market gardens get but little attention until the fruits ripen, when harvesting them, either for storing or for immediate marketing, requires much time and care. In gathering, large baskets are usually set here and there in the orchards, and the pickers collect the fruits into smaller ones, and empty them into the large ones, according to the kind. The fruits are then either sorted on the spot, or are conveyed to the packing shed. The largest, medium-sized, and smallest fruits are all picked out and kept separately, as they sell better when thus sorted than when all are mixed. Lime is often dusted over fruit trees to keep down caterpillars, and other leaf-eating insects. Limewash, too, is frequently painted on the main stems after they have been scraped clean in winter. This is to prevent the ascent of insects from the ground, and to prevent the growth of Lichen; but some consider it of little use. F.

Queries Respecting Vines.—The following replies furnished by Mr. Thomson, of Clovenfords, may be taken as trustworthy answers to the questions to which they respectively refer. When is the best time to plant Vines? [From the end of February to the beginning of April.] What are the best Grapes for two houses, each 14 feet long—one with stove and the other with greenhouse temperature—both well furnished with heating power? [The space (14 feet) will admit of five Vines being planted in each house; the varieties best suited for the stove are, two Muscats of Alexandria, one Tynningham Muscat, one Mrs. Pince, and one Gros Guillaume; for a greenhouse, with or without fire heat, select three Black Hamburgs, one Duke of Buccleuch, and one Royal Muscadine.] What is the right age and condition of the Vines for planting? [Twelve months is the time a Vine requires to get into a proper condition for planting. Struck from eyes this spring, grown on throughout the summer, and well ripened in autumn, they are in fine order for planting the following

spring. Vines struck in spring and planted in May in a growing state are, however, in every way best.]

A Novel Cure for Diseased Vines.—The Abbe Rolland has communicated to the *Cultivateur de la Region Lyonnaise* an "infallible remedy" against the Phylloxera, which, after two years' trial, he recommends "with confidence" to Vine growers. It consists in inoculating the Vine with the pure essence of Eucalyptus globulus, which has lately attracted so much attention in medical circles. A broad incision is made through the bark at the neck of the Vine, in which a few drops of the essence are deposited by means of a small camel-hair brush. The result is, that in about three days the Phylloxera entirely disappears, while the Vine is not in the least injured by the operation. The incision may be made through any other part of the bark with equal success; but the result is more speedily attained the nearer it is made to the roots.

Another Early Peach.—We received on the 15th of July a few specimens of Amsden's June Peach, a very early kind, from our old correspondent Mr. Teas of Carthage, Mo. They were in good order after so long a journey. The specimens received measured a little over an inch and a half in diameter for the smallest, and the largest nearly two inches. They were forwarded from Carthage on the 10th. Mr. Teas, whose statements can be fully relied on for accuracy, informs us that the original tree has been allowed to over-bear, and he was not able to procure good specimens. On trees two years from the bud many of the Peaches, when cut in two, have measured 2½ inches wide and 2 inches high. Illness prevented his sending these, and also compelled him to defer for two days forwarding those that were gathered. Consequently these last specimens were ripe on the 8th of July. This Peach was raised by Mr. Amsden of Carthage, Mo., and is a chance seedling from an unknown sort, the collection of seeds from which it originated having been gathered from different sources. It fruited for the first time in 1872, and the earliest specimens were ripe the last of June—the latest on the 7th of July. Last year the frost destroyed the crop. This year, although a late season, the first specimens were ripe July 3, and those sent us, on the date already mentioned. With the specimens forwarded was also one of Hale's Early, less than half the size of Amsden's, and perfectly green. Mr. Teas informs us that this was taken from a tree growing alongside, and as good as could be found, with precisely the same soil, situation, and treatment throughout. He further adds:—"Early Beatrice we have bearing a very few. While it is far ahead of Hale's in ripening, it is as much behind Amsden's in earliness and colour, and, as far as we can judge from our samples, not half its size. Amsden's far surpasses Hale's in quality, and is thought to resemble Large Early York. Like that variety, the flesh partly adheres to the small stone." There is no question that this is a Peach, as yet, unequalled for earliness. Allowing a difference of a month in the ripening of fruit at Carthage and in Central New York, it would still be at least two weeks earlier than Hale's, and we are assured by our correspondents at Carthage that there is at least this difference between the two. The tree is stated to be a free grower, hardy and productive, the flowers large, and the leaves with globose glands. The specimens sent us were mostly dark red; flesh, greenish-white, juicy, and with a fine flavour. We cannot but regard it as a valuable acquisition, and shall look with interest to its character when fruited in other localities.—*Cultivator*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Plums for Wall Culture.—I should like a short list of Plums suited for wall culture; the aspect is a sunny one.—W. E. E. [Greengage, Kirke's Admirable, Coe's Golden Drop, Jefferson, Washington, Magnum Bonum, Orleans, and Reine Claude de Bayay.—Ed.]

Pears for a South Wall.—I wish to devote a good south wall to Pear culture, and shall be obliged by your giving me a list of the very best kinds for this purpose.—J. H. [Jargonelle, Beurré d'Amanlis, Gansel's Bergamot, Marie Louise, Van Mons Leon le Clerc, General Tottenhien, Glon Moreau, Joséphine de Malines, Winter Nelis, Bergamotte Espéran, Ne plus Meuris, Easter Beurré, Beurré Diel, Beurré Rance, and Duchesse D'Angoulême.—Ed.]

Old Apple Trees.—The Secretary of the Maine (U.S.A.) Board of Agriculture, in his late report, mentions an Apple tree at New York, that was brought from England over 200 years ago in a tub, and was still bearing fruit in 1870; another, near Wiscasset Bay, that was an old tree in 1805, but is still fruitful; another, in the town of Bristol, known to be over 200 years old, still bearing fruit, and other trees that yield occasionally from 25 to 65 bushels of fruit each.

French Ringing-tongs.—These, though useful, are not so generally used as they deserve to be. As is well known, ringing is generally practised on Vines in order to induce them to produce larger and better Grapes than they otherwise would do. By means of the French ringing-tongs, ringing is made easy, as the operator has only to apply the top of the instrument underneath a bunch of Grapes, and, by turning it round, a small piece of bark is removed by the knives, which are opened and then firmly pressed together by the spring. The same instrument may also be used in the case of Apple and Pear trees.—A. M. C. JORCKINT CONINCK, *Tottenham Nurseries, Dedemsvaart, near Zicelle, Netherlands*.

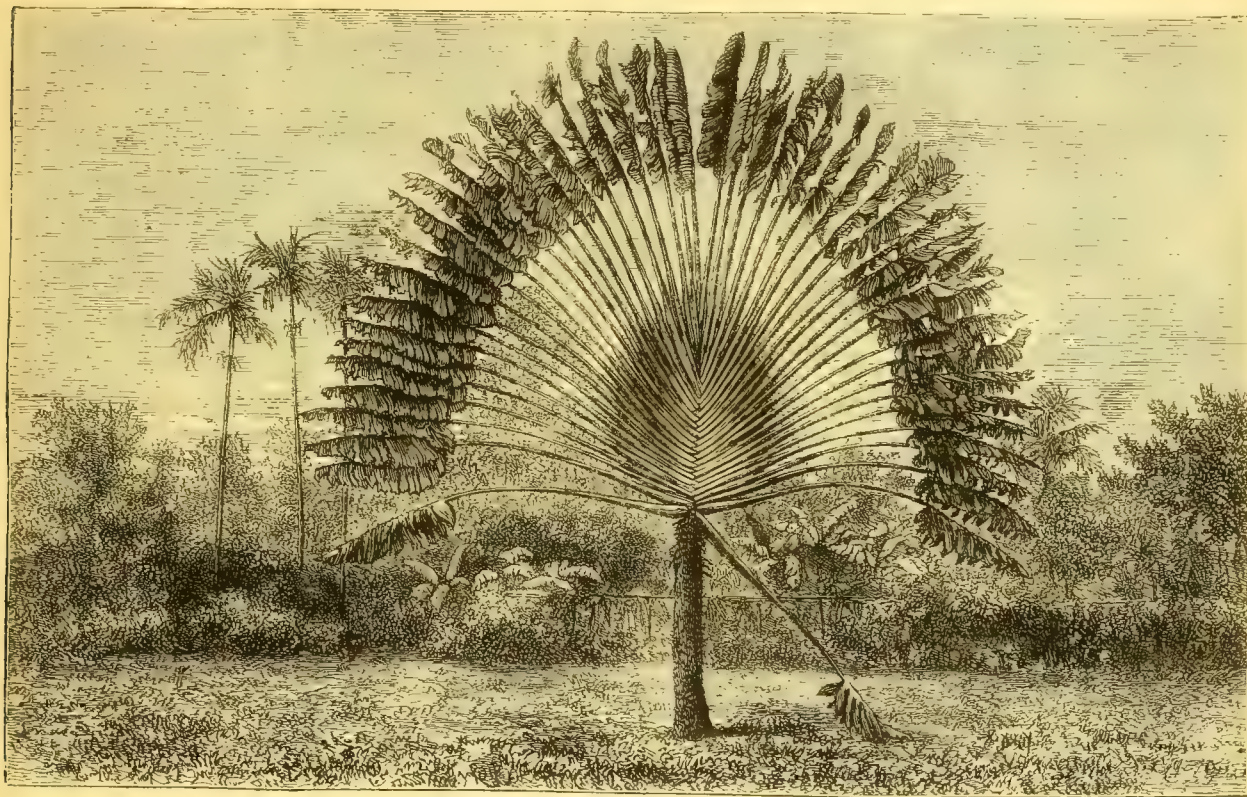
THE TRAVELLERS' TREE.

(RAVENALA MADAGASCARENENSIS.)

THIS is one of the most striking of all Musads, and one not unfrequently met with in cultivation in this country. A fine specimen of it may be seen in the Palm-house at Kew, and it forms a noble ornament to the conservatory at Chatsworth and other places. The plant has a peculiar appearance, owing to the fan-like arrangement of its great glaucous leaves, which are larger than those of any other ligneous plant having simple foliage. It is nearly related to *Musa* and *Strelitzia*, but differs from both in having six stamens and woody capsular fruit. The seeds of this plant are especially beautiful, being partially surrounded by a clear blue arillus, which shines with metallic lustre when in a fresh state. The plant is a native of Madagascar; but it is also found in the Straits Settlements, especially in Singapore, where it is known as the "Travellers' Fountain," a popular name derived from the fact that the great sheathing

LEAF MUSIC.

THE music of the leaves, always beautiful in its infinite variety, is perhaps, fuller in tone and at its very best just at this particular period. In a fortnight's time its melody will have a harsher sound; it will have a slight discord; it will have a sad undercurrent of melody in a minor key, suggestive of decay and death, a forerunner of the melancholy of autumn, and the gloom and desolation of winter. So charming is this music, so suggestive is this melody, so teeming with fantastic ideas, so replete with poetry and beauty, that it is a matter of great wonder that it has not been long ago utilised by musicians. Why have we not a "Foliage Fantasia," and why has not some one composed a "Leaf Sonata?" What a number of "songs without words" do we hear sung in the upper branches of trees at this period of the year! Is it possible to put down upon paper, is any one equal to the task of producing in type, the myriad of fancies that occur to one, the thousand of sweet songs that are sung for your especial delectation as you fling yourself down on the green-sward and gaze upwards, and start on a dreamy excursion amid the rustling leaves of some superb old Elm? Experts in leaf music,



The Travellers' Fountain Tree of Madagascar.

stalks or petioles are capable of holding a considerable quantity of rain-water or condensed moisture, which trickles down from the flat leaves above, and is readily obtained by piercing the lower part of the sheath and catching it in a vessel beneath. In this way the tree is said to be a great boon to thirsty travellers in the islands in which it luxuriates. As an ornamental or decorative plant it ranks with the Musas, properly so called, and grows well under the same treatment. Fine effects may be obtained by planting out a specimen of it in the richly-manured bed of a warm conservatory, where, under liberal treatment, it soon develops itself. It is sufficiently hardy to withstand our summer climate as a sub-tropical plant, but, when so used, a warm sheltered nook should be selected for it, as its foliage, like that of Musas and *Strelitzias*, is extremely liable to be slit or torn by rough winds. Our illustration, from an interesting book of travel entitled "The Land of the White Elephant," represents a specimen met with on a roadside in Singapore, where the plant is said to grow luxuriantly, and Ellis found it growing plentifully in the thickets in Madagascar.

enthusiastic arboriculturists, people who have devoted their lives to the study of this matter, are able to draw fine distinctions between the Elm, the Oak, the Ash, the Larch, the Birch, the Poplar, the Willow, the Plane, the Lime, the Beech, and the Fir. They aver they could tell with their eyes shut any tree by the flutter of its leaves. Though undoubtedly the ear would require education and constant practice to arrive at such accurate discrimination, there is no reason whatever that it should not be achieved in time. One man hears only the singing of birds, but another can tell you exactly what particular kind of bird is singing; there is no reason whatever that the same rule should not be applied to the rustle of leaves. The skeleton of each variety of tree is differently constructed, the foliage of each is of a totally distinct nature, so there is but little doubt that every species of tree rustles in a different key and a different measure. With the finer theories of leaf-music and the more profound depths of the study of foliage-melody it is scarcely necessary to treat in this present paper. It is rather proposed to speak of the subject from a popular point of view, and to show the universality of its influence. Undoubtedly its influence has become greater during the last few years; people will have leaf music if they can have nothing else. You may see in the poorest room in some

close over populated court in the lowest part of the town, a creeper growing outside the window, which by the flutter of its leaves brings back a world of pleasant fancies to its proprietor; you may note that trees are being planted wherever it is possible for them to grow, and you will find even among the ruffians who haunt the Thames Embankment that trees are infinitely more respected than are the ornamental iron railings; and there is but little doubt that if the proposal to plant trees more generally in our streets were carried out, not only would they grow, but they would be rigorously respected and protected by even the roughest portion of the population. Nothing is more unpopular in the present day than cutting down trees. It may be remembered what severe lectures the daily press read the Benchers of the Middle Temple for treating in summary fashion one or two old Elms in Garden Court, and desecrating the quaint, picturesque little enclosure hallowed by the memories of Ruth Pinch and John Westlock. We can call to mind the vigour and enthusiasm displayed by those who are resisting all attempts to convert Epping Forest—with its vast orchestra of tree-musicians—into desolate “desirable building sites,” and it is pretty certain that if Mr. Albert Grant, in the place of erecting a statue of Shakespeare in Leicester Square, had transported thither and planted a few large trees, he would have added to his popularity four-fold. If the Draper’s Company, which by the way is quite rich enough to be able to withstand the temptations of speculative builders, were to decide to preserve their quaint garden with its Mulberry trees, its Poplars, and its Maples, with its pond and its bright green turf, in all its integrity, what an incalculable blessing they would confer on weary mankind! To think there would be a pleasant haven, within the roar of Capel Court, the hum of high ‘Change, and the auriferous babble of Lombard Street, where one could retreat and enjoy a little rest and a thousand exquisite fancies as one listened to the music of the leaves, would be joy indeed. Leaf music is especially valuable in crowded cities, it is rarer, and therefore the more prized. . . . Possibly leaf music is more poetical than the music of the sea, because it has more variety. It is a fascinating study, and the more you pursue it the more enchanting does it become. How often when you have taken your favourite author to read beneath some old tree, do you find that you remain for hours without turning a page! You are listening to the music of the foliage, and the untold fancies and reminiscences that are whispered through it. Come back sweet voices long since hushed; come back the vision of bright eyes; come back the dreams of long ago; come back days that you have forgotten; come back a thousand fleeting fancies and a thousand poems and pictures that you fain would fix on your brain, but which vanish like Thistle-down in a summer breeze when you cease to listen to the music of the leaves.—*Graphic*.

THE ARBORETUM.

PRESERVATION OF TIMBER.

OVER two hundred years have elapsed since a patent was taken out to preserve wood from decay; but the means employed by the inventor of that period were cumbrous as well as costly and inapplicable, except on dry land. The idea was to plaster constructions of timber with a coating of clay. To speak modestly of the progress which has been made in the same direction in the interval, it has not been great. Successive inventors have struck out plans for arresting rot by permeating the wood with creosote or chemical solutions of different kinds; but none of the methods adopted answered either the need or the expectation. The process of creosoting timber is decidedly antiseptic; the vegetable germs are destroyed, but then the moisture is driven into the centre, and the material rendered more inflammable. Then we have had Burnetising (so called after the name of the inventor), and kyanising; but though both have good qualities they are open to objections, which are claimed not to lie against a system just introduced by the Rev. Dr. Jones, and which was experimented with in presence of several gentlemen on the afternoon of the 8th inst., at the residence of Mr. W. C. Jarvis, the Priory, Tandridge, near Godstone, Surrey. Dr. Jones is confident that his patent will not only avert dry-rot, but absolutely cure it, and render timber considerably less liable to the action of fire. The first experiment was tried on two pyramids, constructed by placing a large number of pieces of wood together, one being “pickled” with the preparation and the other unprepared. A pint of petroleum was placed on each, and whilst all that remained of the unprepared timber was the usual residuum of ashes, that which was soaked with the preparation remained almost intact. The next experiment was that tried on a barrel of the usual Government size, under the head of which was placed a quantity of gunpowder, wrapped in a piece of tissue paper, and then enveloped in brown paper prepared with Dr. Jones’s solution. Though subjected

to the heat caused by petroleum being poured over unprepared shavings, the gunpowder did not explode even when the flames were directed to the interior of the barrel. When taken out the gunpowder was found in precisely the same condition as it was prior to being subjected to fire. The third experiment was that of setting fire to two wooden houses, one being prepared by the process and the other not so treated. In the instance of the former, though subjected to the heat caused by a large fire being placed in the centre of the basement, the floor was but slightly charred; in the other, as might have been anticipated, the flooring was completely burnt, and had time been allowed the whole structure would have been destroyed. A fourth experiment was that of subjecting a wooden box, of several inches thickness, to the flames of a fierce fire for some fifteen minutes. When taken out the exterior of the box was but little charred, and on it being opened a parchment deed, to which a large seal had been attached, was found unharmed; the sealing wax itself not presenting any appearance of having suffered from melting. After these tests of the efficacy of the treatment had been concluded, those present were shown a piece of timber taken from her Majesty’s ship “Lord Clyde,” which had been restored from a state of almost pulp to its normal condition.

A Murdering Liane.—The Fig springs up close to the tree on which it intends to fix itself, and the wood of its stem grows by spreading itself like a plastic mould over the stem of its supporter. It then puts forth, from each side, an arm-like branch, which grows rapidly, and looks as though a stream of sap were flowing and hardening as it went. This adheres closely to the trunk of its victim, and the two arms meet on the opposite side and blend together. These arms are put forth at somewhat regular intervals in mounting upwards, and the victim, when its strangler is full-grown, becomes tightly clasped by a number of inflexible rings. These rings gradually grow larger as the murderer flourishes, rearing its crown of foliage to the sky, mingling with that of its neighbour, and in course of time they kill it by stopping its flow of sap. The strange spectacle then remains of the selfish parasite clasping in its arms the lifeless and decaying body of its victim, which had been the help of its own growth. Its ends have been served, and it has flowered and fruited, reproduced and decimated its kind.

A Fine and Rare Shrub (*Stuartia pentagynia*).—We have few ornamental shrubs which show flowers at the end of summer; hence our appreciation of those blooming at that season. The *Phloxes*, *Gladioli*, and various summer-blooming herbaceous and bulbous plants, keep the garden gay and relieve the monotony of those “walls of green” formed by dense groups or borders filled with only late or early flowering shrubs. Still, a little variation from general appearances is sometimes quite a relief to the eye. I was reminded of this by noticing the other day that a large plant of this *Stuartia* was in full bloom, its large, pure white, shell-like flowers peeping out from among the deep green leaves of the surrounding plants in a most fascinating manner. This elegant shrub is a native of the mountains of Virginia and still further south; it is far superior in all those qualities which go to make up an elegant ornamental shrub than nine-tenths of the far-fetched and dear-bought varieties imported from China and other distant countries. We have two native species of *Stuartias*, both superb ornamental plants. The *S. virginica* is also a native of the Old Dominion and further south, but is found chiefly in low grounds along the borders of streams, and is not quite as hardy as the *S. pentagynia*, therefore it is likely to be winter-killed when cultivated in the more Northern States. It is a beautiful shrub, growing 8 to 10 feet high, with finely serrated leaves and pure white flowers 2 to 3 inches in diameter. The *Stuartia pentagynia* being a native of more elevated regions is, in consequence, more hardy, never having been injured in my garden during our severest winters. It is a handsome, erect-growing shrub, with ovate-pointed leaves 5 to 6 inches in length; petals, white, with finely fringed or jagged edges.—*Moore’s Rural*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

A New Andean Cranberry (*Vaccinium Mortenia*).—In my paper on the Hardy Ericaceæ (see No. 143, page 111), you make me say *Vaccinium Myrtillus* instead of *V. Mortenia*. The latter is a beautiful new evergreen species introduced by J. Anderson-Henry from the Andes, clothed in spring with pink flowers, and now with numerous purple berries covered with a white powdery bloom.—*JAMES M’NAB*.

Curious Growth of Hawthorn.—A very curious phenomenon was noticed upon a Hawthorn the other day in Cheshire. On a perfectly healthy bush, on which the fruit was ripening, there was one branch apparently withered, not a single leaf upon it, but in the place of the leaf-buds were small close clusters of white flowers, giving the whole branch much the appearance of the Black-thorn. It was as if the flow of sap had met with a sudden check in the spring, and the branch was unable to produce its leaves, but recovering itself in the warmer weather, managed to produce its flowers six or seven weeks behind time.—*G*.

THE KITCHEN GARDEN.

WHAT TO DO WITH THE POTATO CROP.

THE season being so far advanced with little or no disease of consequence, the Potato crop may be looked upon as safe from the dreaded disease, which, from the first year of its visitation, has never appeared in a virulent form after July. But the crop, except in the best Potato land, or where the soil is of a deep alluvial nature and somewhat damp, will not be heavy, nor particularly good in quality. In many parts of the country, even the second early varieties were severely cut with the late frosts. This always has the effect of reducing the size of the tubers at taking-up time; but the principal cause in affecting both quantity and quality is the continued drought, which in far the greater portion of the country has checked growth to a damaging extent. What remains of the early sorts yet in the ground should at once be taken up; for, in their case, after the tops are dead down, nothing can be gained by allowing them to remain longer. The second earlies and late sorts, since the third week in July, have shown unmistakeably in most places that growth had stopped, the under leaves flagging in the sun, and the tubers, when examined, being found to have the eyes just starting about the size of pin heads. Whilst the soil remains in its present dry state, there will not be much danger of the tubers pushing this second growth to a serious extent; but as soon as rain comes in any quantity, they will at once begin to form the second tubers. Such of the second early sorts as have their skins tolerably firm, and not easily removed with the hand, are better taken up; but the late varieties, the tubers of which are young and the skins tender, are better left in the ground whilst the weather continues as it is. But as soon as enough rain falls to excite them, up they must come without any delay, for the second tubers they push are fit for nothing but pigs. I speak this from actual experience, having tried the effects of taking up at different periods, after the stoppage of their growth through drought in seasons similar to the present. Pitting Potatoes is a barbarous system under any circumstances; on no account should these prematurely-taken up, half-ripened Potatoes be stowed away in pits; they should be laid, not too thickly, in a darkened building, as cool as they can be kept, and turned over two or three times during the next three months, to prevent anything like heating. From lengthened experience in Potato culture, I have long come to the conclusion that the time for taking up the crop is the time to commence preparation of the seed for the succeeding year, in the case of either early or late varieties, by fully exposing them to the open air, so as to allow their becoming thoroughly green. In the case of the limited quantities required for garden culture, they should be kept where they can receive as much light all through the winter until planting time as will prevent the sprouts becoming drawn and weakened. By nothing short of this can the seed be in a state best calculated to have a reasonable chance of producing a crop that will escape the disease. The advantages gained by this continued exposure to the light are two-fold. First, that the sprouts never become lengthened and weakly, so as to cause their being easily broken off in the operation of planting, with the consequent weakening of the tubers produced by the second effort; secondly, by the retention of the first sprouts in a strong vigorous condition, this treatment ensures the crop coming to maturity something like a month earlier than when the seed has been treated in the usual way. As to the exposure of the seed for the purpose of greening, if the disease at all makes its appearance amongst such as are yet in the ground, any that are laid in the open air greening should at once be removed under cover; for, even if there are no other Potatoes within some hundreds of yards, the exposed ones will become affected to even a greater extent than if they had been in the ground, and in a growing state. This I experienced some dozen years ago, to such a degree that not more than one-twentieth of the seed so exposed escaped; a circumstance that was so far conclusive with me, as to warrant the conviction that the spores of the disease are present in the air only requiring such conditions of the atmosphere as are favourable to their development. So far as the influence of greening the seed and keeping it where too early and a weakened condition of the sprouts will not be produced, I may be charged

with repeating advice a hundred times previously given; but where we see, year after year, the seed, in cases innumerable, still treated in the same barbarous manner, with little attempt at a better system, it becomes almost a duty to continually urge the necessity for a more rational treatment for this indispensable vegetable.

T. BAINES.

Keeping Old Potatoes.—Potatoes, to be good, should never be exposed to the light, but be kept in as dark a place as possible. After they begin to sprout in the spring they should be taken up from the bins or heaps, and be kept in boxes or barrels. If you have a few barrels saved out for family use, instead of picking them over and spreading them every few weeks, put them into enough barrels so that you can easily turn them from one to another. Have one extra barrel, and once every week turn them all out from one barrel to another. This keeps them moving so often, that the sprouts cannot grow enough to do much harm. The sprouts which come out from the Potato use up the nourishment it contains, and leave it soft, watery, and insipid. By treating them as proposed above, they may be kept in condition for the table several weeks longer than by sprouting them, and at the same time save a deal of work.

The "New" Asparagus.—As some may be incredulous on the subject of making a new variety out of the old and common sort, and at the same time make the people, or a larger portion of them, believe it, we have only to call to mind the so-called "Connover's Colossal" Asparagus, which was brought out as new, at a big price; and, according to an able correspondent of Moore's *Rural*, no uninterested party has ever been able to discover wherein it differed from the old and common sort. But the parties interested in bringing out this pseudo new variety are deserving of much credit in recommending that the roots be planted at a far greater distance apart than the old sort, for it was said that this giant required room corresponding with its size; and herein lies one of the secrets of its success, as well as many of the endorsements regarding its distinctive and superior merits. This recommendation of allowing more room in which to grow is also the secret of the continued success; and, at the same time, it is a great innovation upon the old-time system of crowding the roots, as recommended in all of our earlier standard works on vegetable gardening.

The Autumn Mousseron (*Agaricus prunulus*).—This is just now putting in an appearance on the grassy borders of woods and in sheltered pastures. Not a vestige of the spring Mousseron is now to be seen. The cap of *A. prunulus* is of snowy whiteness when it first appears; even the gills, in the young stage, are white, though, as the *Agaric* attains maturity, they change to pale salmon. They are conspicuously decurrent on the stem, which is slightly bent and bulboid, with felt-like down clothing it below. The spores in *prunulus* are rosy-salmon and pip-shaped; those in *gambosus* white and oval. Both *Agarics* have a strong smell of fresh meal, and both are esculent and savoury, requiring, however, more cooking than the common Mushroom. No difficulty should be found in identifying this species; I will add, however, a further diagnosis: The young snow-white cap is waved and contorted, as in the spring Mousseron, smooth to the touch, like a white kid glove, and revolute at the edge. The gills groove the upper part of the stem; they are white in youth, the white assuming a pale salmon colour with age. The gills are in sets of five varying lengths. The stem is firm, white, bulboid, and clothed with byssus at the tortuous base. These characters should be sufficient to enable an ordinary observer to distinguish it at once. This *Agaric* is sold, in the markets at Paris, dried, and used as a seasoning to gravies, like the Morel.—PETER INCHBALD, *Hovingham Lodge, York*.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Asparagus Culture in Germany.—It is asserted that near Brauneschweig, Germany, 25,000 acres are cultivated in Asparagus, most of which is canned. The variety cultivated is called *Rose Hollande*. We have received and eaten samples of this German canned Asparagus, and it is most excellent.

Culverwell's Prolific Marrow Pea.—We have received a sample of this Pea from Mr. Culverwell, of Thorpe Perrow, who states that it is the result of a cross between Veitch's Perfection and Champion of England. It grows about 18 inches higher than Veitch's Perfection, and is very prolific. The pods set were large and well filled, and the flavour all that could be desired. To tall-growing Peas it is a very remarkable addition.

Planting Asparagus in Summer.—Chief Gardener Streubel, from Karlowitz, read an essay before the Society for Garden Culture in Breslau, Germany, in which he advocated the planting of Asparagus during the summer, instead of in the spring and fall. He gave as his reasons that, by planting in spring, two different functions were required of the plant, viz., to take root and to continue to grow. By fall planting, the actions of the plant remain dormant until spring, whereas, by summer planting, the plant gains time to attach its roots, and then is ready for a vigorous growth in the spring. No particulars are added as to the condition or age of the plants at planting time.

FERTILISATION OF WILD FLOWERS BY INSECTS.

A LECTURE on common flowers in relation to insects, was delivered to the British Association, at Belfast, the other evening, by Sir J. Lubbock, who, after a short historical introduction, in which full justice was done to the labours of his predecessors, especially of Sprengel, Darwin, and Müller, went on to say:—While every one knows how important flowers are to insects, comparatively few are aware how important, on the other hand, insects are to flowers. Many flowers, indeed, are entirely dependent on insects for the transference of the pollen from the stamen to the pistil, without which no seed could be set; while, in others which can fertilise themselves, it is yet of the greatest importance by avoiding “in and in” breeding. Every breeder of cattle or sheep will appreciate this. It is not less advantageous to plants that the pistil of one flower should, at any rate occasionally, be fertilised by the pollen from another. If, then, it is an advantage to flowers that they should be visited by insects, it is obvious that those flowers, which, either by their larger size, or brighter colour, or sweeter scent, or greater richness in honey, are most attractive in insects, would *ceteris paribus* have an advantage in the struggle for existence, and be most likely to perpetuate their race. In most flowers, indeed, the pistil is surrounded by a row of stamens, and it would at first sight seem a very simple matter that the pollen of the latter should fall on the former. This, in fact, does happen in many cases, but in others, from the structure of the flower, it is impossible. In these cases the transference of the pollen from one flower to another is effected principally either by the wind or by insects. Wind-fertilised flowers, however, as those of Birches, Poplars, and Grasses, are never brightly coloured, and are, indeed not popularly recognised as flowers. In our ordinary flowers, the transference of the pollen from one flower to another is effected by insects, and the colour, the scent, and the honey are the attractions by which the visits of insects are secured. That the beauty of flowers is useful in attracting insects is shown, moreover, by those genera in which we find species which vary very much in size and beauty. Thus we have two common species of Mallow (*Malva sylvestris* and *Malva rotundifolia*) which agree closely with one another in other respects, but of which the former is much larger than the latter, and Sir John showed that the former is dependent for its fertilisation on the visits of insects, while the latter is capable of fertilising itself. To show that this is no isolated case, he brought forward several other examples of the same fact, especially one very striking one in the genus *Geranium*. *Geranium pratense* is one of our larger species, and is nearly twice as large as *Geranium pyrenaicum*, which again is nearly twice as large as *G. molle*, while *G. molle* itself is considerably larger than *G. pusillum*. Now in *G. pratense* the pistil does not come to maturity till all the stamens have ripened and shed their pollen, and the flower, therefore, is absolutely dependent on insects for its fertilisation. In the second *G. pyrenaicum* some of the stamens have shed their pollen before the pistil is mature, but the visits of insects are, therefore, not absolutely necessary. In *G. molle* the pistil matures still earlier; while, lastly, in *G. pusillum* it matures even before the stamens. Here, therefore, we have a complete series, and the more the flower is dependent on insects the longer it has become. As already mentioned, the self-fertilisation of flowers is guarded against in various ways. Very frequently the stamens and pistils do not ripen at the same time. In some cases the pistil ripens before the stamens. Thus the *Aristolochia* has a flower which consists of a long tube with a narrow opening, closed by stiff hairs which point backwards, so that it has some resemblance to an eel trap. Small flies enter the tube in search of honey, but from the direction of the hairs find themselves imprisoned and cannot get out again. Gradually, however, the pistil passes maturity, the stamens ripen, and shed their pollen, by which the flies get thoroughly dusted. Then the hairs of the tube shrivel up, and release the prisoners, who fly away and carry the pollen to another flower. Again, in the common *Arum* we find a somewhat similar arrangement. The well-known green leaf encloses a central pillar, which supports a number of pistils near the base of another somewhat higher. Now, in this case, nothing would at first sight seem easier or more natural than that the pollen from the anthers should fall on and fertilise the pistils. This, however, is not what occurs. The pistils mature before the anthers, and, by the time the pollen is shed, have become incapable of fertilisation. It is impossible, therefore, that the plant should fertilise itself, nor can the pollen be carried by wind. When it is shed, it drops to the bottom of the tube, where it is so effectively sheltered that nothing short of a hurricane could dislodge it. Although the *Arum* is common enough, still the chances against any of the pollen so discharged being blown into the tube of another plant would be immense. As, however, in the *Aristolochia*, so also in the *Arum*, small insects, which, attracted by the showy central spadix, in the prospect of shelter or of honey, enter the tube when the stigmas are mature, find themselves imprisoned, as

the fringe of hairs which permitted their entrance prevents their returning. After a while the period of maturity of the stigmas is over and each secretes a drop of honey, thus repaying the insects for their captivity. The anthers then ripen and shed their pollen, which falls on and adheres to the insects. Then the hairs gradually shrivel up and liberate the insects, which emerge, carrying the pollen with them, so that those which then visit another plant can hardly fail to deposit some of it on the stigmas. Sometimes more than a hundred small flies will be found in a single *Arum*. In these two cases there is obviously a great advantage in the fact that the stigmas arrive at maturity before the anthers. Generally the advantage is the other way, and the stamens ripen before the pistil, as was shown by diagrams representing the Pink, Thyme, and other flowers. Of this the common so-called *Nasturtium* (*Tropæolum*) is an interesting case. It produces much honey, which is situated in a long hollow spur. The flowers are much visited by insects, which thrust their proboscis down the spur in search of honey. When the flower first opens neither the stamens nor pistils are mature and they are all turned slightly downwards. Very soon, however, one of the stamens turn upwards, so as to stand just at the entrance to the spur, and in such a position that the under side of the proboscis of any insect wanting the honey almost inevitably rubs against it and carries off some of the pollen. One after another the eight stamens raise themselves and occupy this position, a process which occupies several days, after which they turn down again to the original position, and the pistil in its turn raises itself to the mouth of the tube. From this beautiful arrangement it is evident that the bees and other insects visiting this flower for the sake of the honey inevitably dust themselves with pollen from the younger flowers, and transfer it to the pistil of the older ones. In few flowers is the adaptation of the various parts to the visits of insects more clearly and beautifully shown than in the common white Dead Nettle (*Lamium album*). The honey occupies the lower contracted portion of the tube, and is protected from the rain by an arched upper lip and by a thick ring of hairs. Above the narrower lower portion the tube expands and throws out a broad lip, which serves as an alighting place for large bees, while the length of the narrow tube prevents the smaller insects from obtaining access to the honey, which would be injurious to the flower, as they would remove the source of attraction for the bees, without effecting the object in view. At the base of the tube, moreover, there is a ring of hairs, which prevents small insects from creeping down the tube, and so getting at the honey. *Lamium*, in fact, like so many of our other wild flowers, is especially adapted for humble bees; they light on the lower lip, which projects at the side, so as to afford them a leverage by means of which they may press the proboscis down the tube to the honey, while, on the other hand, the arched upper lip in its size, form, and position, is admirably adapted not only as a protection against rain, but also to prevent the anthers and pistil from yielding too easily to the pressure of the insect, and thus to ensure that it presses the pollen it has brought from other flowers against the pistil, and, on the other hand, carries away a fresh supply from the anthers. From the position of the pistil, which hangs down below the anthers, the bee comes in contact with the former before touching the latter, and, consequently, generally deposits upon the stigma pollen from another flower. The small processes on each side of the lower lip are the rudiments of the lateral leaves with which the ancestors of the *Lamium* were provided. Thus, then, we can see how every part of this flower is either, like the size and shape of the arched upper lip, the relative position of the pistils and anthers, the length and narrowness of the tube, the size and position of the lower lip, the ring of hairs, and the honey, adapted to ensure the transference by bees of pollen from one another, or, like the minute lateral points, is an inheritance from more highly developed organs of ancestors. Sir John Lubbock then called attention to certain species of the genus *Salvia*, a form allied to the Dead Nettle, but in which the back of the bee does not come in contact with its arched upper lips, and consequently does not touch the anthers in their natural position. They possess, however, a very curious tinge point, so arranged that the proboscis of the bee, in passing down the tube, presses one arm of a lever, and thus brings the other, which bears the anther down on to the back of the bee. The common Heaths (*Erica tetralix* and *Erica cinerea*), offer us another very ingenious arrangement. In *Erica tetralix* (the cross-leaved Heath), for instance, the flower is in the form of a bell, which hangs with its mouth downwards, and is almost closed by the pistil which represents the clapper. The stamens are eight in number, and each terminates in two cells, which diverge slightly, and have at their lower end an oval opening; but, though this opening is at the lower end of the anther cells, the pollen cannot fall out, because each cell, just where the opening is situated, touches the next anther cell, and the series of anthers thus form a circle surrounding the pistil, and not far from the centre of the bell. Each anther cell

also sends out a long process, which thus form a series of spokes standing out from the circle of anthers. Under these circumstances, a bee endeavouring to suck the honey from the nectary cannot fail, firstly, to bring its head in contact with the viscid stigma, and thus to deposit upon it any pollen derived from a previous visit; and, secondly, in thrusting its proboscis up the bell, it inevitably comes in contact with one of the anther processes, which acts like a lever, and dislocates the whole chain of anther cells, when a shower of pollen falls from the open cells on the head of the bee. In many cases the effect of the colouring and scent is greatly enhanced by the association of several flowers in one bunch or raceme, as, for instance, in the wild Hyacinth, the Lilac, and other familiar instances in the great family of Umbelliferae. This arrangement is still further taken advantage of, as in the common wild Chervil (*Chærophyllum sylvestre*). In this group the honey is not, as in the flowers just described, situated at the bottom of a tube, but is exposed, and is therefore accessible to a great variety of small insects. The union of the florets into a head is, moreover, not only of advantage in rendering them more conspicuous, but also effects a considerable saving of time, as it enables the insects to visit a given number of flowers more rapidly, and, consequently, renders their fertilisation more certain than if they had stood singly. The self-fertilisation which, in small flowers such as these, would otherwise naturally occur, is provided against by the fact that the stamens ripen before the pistil, and the latter is not mature until the former have shed their pollen; so that the flowers cannot, therefore, fertilise themselves in some cases, as, for instance in Myrrhis. The flowers of one head are all, firstly, in the male condition, and subsequently in that with mature stigmas, none of them arriving at the second stage until they have all passed through the first. It will be seen that in these florets the petals are not symmetrical, the outer ones being considerably larger than the others, and in many Umbellifers the florets themselves, on the outer edge of the bunch, or umbel, are considerably larger than the minor ones. This distinction is carried still further in the Compositae, where also the florets are so closely packed that the whole umbel is commonly—though, of course, incorrectly—spoken of as a flower. For instance, the heads of the common Daisy are not, strictly speaking, flowers, but bunches of flowers closely packed together on a common base or receptacle. The advantages of this arrangement are, first, that the flowers become much more conspicuous than would be the case if they were arranged singly; secondly, that the facility with which the honey is obtained renders them more attractive to insects; thirdly, that the visits of the insects are more likely to be effectual, since the chances are that an insect which once alights touches several, if not many, florets. In the large white Daisy the flower-heads consist of an outer row of female florets in which the tubular corolla terminates on the outer side in a white leaf or ray, which, doubtless, is useful in making the flower conspicuous. The minor florets are also tubular, but are small, yellow, and without rays; each of these florets is furnished with stamens as well as a pistil. The stamens are united on their minor sides, so as to form a closed tube, within which the pistil lies; they ripen before the pistil, and the pollen is discharged into the upper end of the tube above the head of the pistil. When the flower opens the pollen is already ripe, and fills the upper part of the stamen tubes. The pistil, however, also continues to elongate, and at length pushes the pollen against the upper end of the tube, which gives way, and thus the pollen is forced out of the tube. The pistil itself terminates in two branches, which at first are pressed closely to one another, each terminating in a brush of hairs; the style elongates, the brush of hair sweeps the pollen cleanly out of the tube, and it is then soon removed by insects. When the pistil has attained its full length the two branches open and curve downwards, so as to expose the stigmatic surfaces, which had previously been pressed closely to one another, and thus protected from the action of the pollen. From this arrangement it is obvious that any insect alighting on the flower-head of the *Chrysanthemum* would dust its under side with the pollen of the younger flowers, which then could not fail to be brought into contact with the stigmatic surfaces of the older ones. As the expansion of the flowers begins at the outside, and thence extends to the centre, it is plain that the pollen of any given flower cannot be used to fertilise one situated on its inner side; consequently, if the outer row of florets produced pollen, it would, in the great majority of cases, be wasted. These florets, therefore, do not produce pollen, while the saving thus effected enables them to produce a larger corolla. It is also interesting to observe that, in these outer flowers, the branches of the pistil do not possess the terminal brush of hair, which, in the absence of pollen, would be useless. In other Compositae, as in the Marigold, while the ray flowers produce no pollen, the disk flowers develop no stigmas. In this case the pistil of the ray flower does not require or possess the terminal brush of hairs, as there is no pollen to be swept out. The

central flowers, on the other hand, though they develop no stigmas, require a pistil in order to force the pollen out of the anther tube; hence, the pistil is present. This alteration of the function of the pistil is extremely curious. In the flowers hitherto described, while the several species offer the most diverse arrangements, we have met with no differences within the limits of the same species, excepting those dependent upon sex. He then proceeded to call attention to some cases in which the same species possess flowers of two or more kinds, which sometimes, as in the Violet, are adapted to different conditions, but more frequently are so constituted as to ensure cross fertilisation. In some of the Violets—viz., *odorata canina*, &c.—besides the blue flowers with which we are all so familiar, but which produce very little seed, there are other autumnal flowers, almost without petals and stamens, in which the seeds are produced. As these curious flowers, however, have no relation to our present subject, said the speaker, I shall not now dwell on them. The genus *Primula* offers a most interesting case of dimorphism. The Cowslip and the Primrose resemble one another in many respects, though the honey they secrete must be very different; for while the Cowslip is habitually fertilised during the day by bumble bees, this is not the case with the Primrose, which, in Mr. Darwin's opinion, is fertilised almost exclusively by moths. If a number of specimens of Primroses or of Cowslips are examined, we shall find that about half of them have the pistil at the top of the tube and the stamens half-way down, while the other half have, on the contrary, the stamens at the top of the tube and the pistil half-way down. An insect, therefore, thrusting its proboscis down a Primrose of the long-styled form would dust its proboscis at a part which, when it visited a short-styled flower would come just opposite the head of the pistil, and could not fail to deposit some of the pollen on the stigma conversely. An insect visiting a short-styled plant would dust its proboscis at a part further from the tip, and which, when it subsequently visited a long-styled flower, would again come just opposite to the head of the pistil; hence we see that by this beautiful arrangement, insects will carry the pollen of the long-styled form to the short-styled form, and *vice versa*. The genus *Lythrum* is a still more remarkable case, as there are no less than three distinct forms belonging to one species. In the course of his lecture, Sir John Lubbock described the arrangement and contrivances by which fertilisation was secured in many other plants, the most curious of which, however—such, for instance, as those in the various species of Orchids—could not be made intelligible without the aid of figures to replace the diagrams by which the lecture was illustrated. He also described the points in which the anatomy of insects has been modified to adapt them to the fertilisation of flowers, dwelling especially on the structure of the mouth and of the legs. He also referred to one other peculiarity of flowers, which is explained if we take this view of the relations of insects to flowers. Many flowers close their petals during rain, which is obviously an advantage, since it prevents the honey from being spoilt or washed away. Everybody, however, has observed that even in fine weather certain flowers close at particular hours. This habit of going to sleep is surely very curious. Why should flowers do so? In animals we can understand it; they are tired and require rest. But why should flowers do so? Why should some flowers do so and not others? Moreover, different flowers keep different hours. The Daisy opens at sunrise and closes at sunset, whence its name, Day's-eye; the Dandelion (*Leontodon taraxacum*) opens at seven and closes at five; *Arenaria rubra* is open from nine to three; Ear Hawkweed (*Hieracium pilosella*) is said to wake at eight and go to sleep at two; the scarlet Pimpernel (*Anagallis arvensis*) to wake at seven and close soon after two; while *Tropogon pratensis* opens at four in the morning, and closes just before twelve, whence its English name, "John-go-to-bed-at-Noon." Farmer boys and labourers are said to regulate their dinner hour by it. Other flowers, on the contrary, open in the evening. Now, it is obvious that flowers which are fertilised by night-flying insects would derive no advantage from being open by day; on the other hand, those which are fertilised by bees would gain nothing by being open at night—nay, it would be a distinct disadvantage, because it would render them liable to be robbed of their honey and pollen by insects which were not capable of fertilising them. He believed, then, that the closing of flowers had reference to the habits of insects. He observed, also, in support of this, that wind-fertilised flowers never sleep, that some of those flowers which attract insects by smell emit their scent at particular hours; thus, *Hesperis matronalis* and *Lychnis veapertina* smell in the evening, and *Orchis bifolia* is particularly sweet at night. He had been, he said, good-humouredly accused of attacking the little busy bee, because he had attempted to show that it does not possess all the high qualities which have been popularly and poetically ascribed to it; but, if scientific observations do not altogether support the intellectual eminence which has been ascribed to bees, they have made known to us, in the economy of the hive,

many various peculiarities which no poet had ever dreamt of, and have shown that bees and other insects have an importance as regards flowers which had been previously unsuspected. To these we owe the beauties of our gardens and the sweetness of our fields. To them flowers owe their scent and colour—nay, their very existence in its present form. Not only have their brilliant colours, the sweet scent, and the honey of the flowers been gradually developed by unconscious selection of insects; but the very arrangement of the colours, the circular bands, and radiating lines, the form, size, and position of the petals, the arrangement of the stamens and pistil are all arranged with reference to the visits of insects, and in such a manner as to ensure the grand object which renders these visits necessary. In conclusion, he observed that, while he had attempted to point out relations which exist between insects and some of our common wild flowers, the whole subject is one which will repay most careful attention; for, as Müller has very truly said, there is no single species the whole history of which is yet by any means thoroughly known to us.

The lecture, of which the above is a mere summary, was received throughout with great applause, the colours of the diagrams being admirably brought out by the action of the electric light.

Carnivorous Plants.

Dr. Hooker offered some interesting observations on this subject, which is one to which we have previously fully alluded. Various observers, he said, have described, with more or less accuracy, the habits of such vegetable sportsmen as the Sundew, the Venus's Fly-trap, and the Pitcher plants, but few have inquired into their motives; and the views of those who have most accurately appreciated these have not met with that general acceptance which they deserved. Quite recently the subject has acquired a new interest, from the researches of Mr. Darwin into the phenomena which accompany the placing albuminous substances on the leaves of *Drosera* and *Pinguicula*, and which, in the opinion of a very eminent physiologist, prove, in the case of *Dionæa*, this plant digests exactly the same substance, and in exactly the same way, that the human stomach does. With these researches Mr. Darwin is still actively engaged, and it has been with the view of rendering him such aid as my position and opportunities at Kew afforded me, that I have, under his instruction, examined some other carnivorous plants. The early history of the subject was then explained up to the date of Mr. Darwin's investigation, the conclusions arrived at being that in the small family of the *Droseraceæ* we have plants which, in the first place, capture animals for purposes of food; and, in the second, digest and dissolve them by means of a fluid which is poured out for the purpose; and, thirdly, absorb the solution of animal matter which is so produced. The very curious group of Pitcher plants called *Sarracenias* next engaged attention. This genus consists of eight species, all similar in habit, and all natives of the eastern States of North America, where they are found more especially in bogs, and even in places covered with shallow water. Their leaves, which give them a character entirely their own, are pitcher-shaped and trumpet-like, and are collected in tufts springing immediately from the ground; and they send up, at the flowering season, one or more slender stems bearing each a solitary flower. This has a singular aspect, due to a great extent to the umbrella-like expansion in which the style terminates; the shape of this, or perhaps of the whole flower, caused the first English settlers to give to the plant the name of "Side-saddle Flower." The first fact which was observed about the Pitchers was, that when they grew they contained water; the second, that they have a digestive process analogous to that which takes place in the stomach of an animal. It is evident that there are two very different types of Pitcher in *Sarracenia*, and an examination of the species shows that there must probably be three. These may be primarily classified into those with the mouth open and lid erect, and which, consequently, receive the rain water in more or less abundance; and those with the mouth closed by the lid, into which rain can hardly, if at all, find ingress. I cannot take leave of *Sarracenia* without a short notice of its near ally, *Darlingtonia*, a still more wonderful plant, an outlier of *Sarracenia* in geographical distribution, being found at an elevation of 5,000 feet on the Sierra Nevada of California, far west of any locality inhabited by *Sarracenia*. It has pitchers of two forms; one, peculiar to the infant state of the plant, consists of narrow, somewhat twisted, trumpet-shaped tubes, with very oblique open mouths, the dorsal lip of which is drawn out into a long, slender arching, scarlet hood, that hardly closes the mouth. The slight twist in the tube causes these mouths to point in various directions, and they entrap very small insects only. Before arriving at a state of maturity the plant bears much larger, sub-erect pitchers, also twisted, with the tip produced into a large inflated hood, that completely arches over a very small entrance to the cavity of the pitcher. A singular orange-red flabby two-lobed organ hangs from the end of the hood, right in front of the

entrance, which, as I have been informed by Professor Asa Gray, is smeared with honey on its inner surface. These pitchers are crammed with large insects, especially moths, which decompose in them, and result in a putrid mass. I have no information of water being found in its pitchers in its native country, but have myself found a slight acid secretion in the young states of both forms of pitcher. I might have added some additional cases to those I have dwelt upon. Probably, too, there are others still unknown to science, or whose habits have not yet been detected. But the problem that forces itself upon our attention is, how does it come to pass that these singular aberrations from the otherwise uniform order of vegetable nutrition, make their appearance in remote parts of the vegetable kingdom—why are they more frequent, and how were such extraordinary habits brought about, or contracted? These remarks will, I hope, lead you to see that though the processes of plant nutrition are, in general, extremely different from those of animals, and involve very simple compounds, yet that the protoplasm of plants is not absolutely prohibited from availing itself of food, such as that by which the protoplasm of animals is nourished, under which point of view these phenomena of carnivorous plants will find their place, as one more line in the continuity of Nature.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

WHEN cuttings of the various kinds of bedding *Pelargoniums* can be obtained as early as the end of July or beginning of August, they may be inserted in ordinary garden soil in a sunny situation in the open air, and will only require to be made firm in the soil, watered occasionally, and kept free from weeds, &c., when they will generally be found to root freely, and will be found fit for potting up by the beginning of October. In many instances, however, it has been found difficult, during the present season, to obtain cuttings sufficiently early to do this, and it is now too late to insert cuttings of these plants in the open borders. Let them, however, be inserted in pots some 4 or 5 inches in diameter, in pans, or in boxes, and placed on cinder ashes in frames or pits, without, however, placing the lights over them as yet, but having them in readiness to be applied whenever heavy rainfall or depression of temperature renders this necessary. It will, doubtless, also, in many instances be found necessary to pot up a considerable number of zonal and other *Pelargoniums* from the beds, and, as such plants have this season made comparatively little growth, they will, consequently, be found to be in good condition for this purpose. As regards the more tender or, at least, less easily increased variegated and tricolor sorts, it is not advisable during any season to trust altogether to the autumn-struck plants; but, in addition, such a number as may be required of the smaller plants from the beds should be lifted and potted before they have been injured by frost. These plants will generally make fine healthy material for furnishing the beds during the following season, supplemented by the smaller plants which have been struck during the present autumn. In the formation of ribbon lines, however, it is generally desirable to use autumn-struck plants of the previous season, in order to secure, as far as possible, uniformity of size. Carpet beds have this season succeeded well, and are now in great beauty, and this style of decoration appears to increase in public favour. To be really effective, however, such beds should have their divisional lines kept well defined by constant pinching or stopping, and this involves but little labour, and is easier accomplished than might at first sight appear to be the case. The various species of *Alternanthera* are among the most useful plants used in this style of ornamentation; but owing, probably, to some peculiarity of the season, some of the species, such as *amabilis* and *paronychioides*, although they have grown well, and have long ago quite covered the soil, are only now beginning to assume the brilliant tints for which they are so very remarkable when grown in the open air, but, their foliage, up to nearly the present time, has been almost quite green. The beautiful species known as *A. amœna* has, however, been an exception to this state of things, having, throughout the season, been as brilliant as usual. The present is a suitable time to study carefully the arrangement of the flower garden, &c.; and, if any desirable alterations or improvements suggest themselves, a note should be made of the same at once, and this should be attended to and carried out at the proper time. Observe, also, the effect produced by the blending of the various shades of colour in flowers and foliage, as much can frequently be done in this way without either additional labour or expense; and the effect produced by the admixture of certain flowering and fine-foliaged plants must be seen to be sufficiently appreciated, such as

that of some of the finest blue Lobelias, or the Viola cornuta, with the finest silver-margined or gold and silver tricolor Pelargoniums, &c.; or that of the late Mr. Beaton's celebrated shot-silk bed, produced by the admixture of Mangles's variegated Pelargonium and Verbena venosa. Make notes, also, of the probable number of the various sorts of plants required to carry out the contemplated arrangements of the following season, allowing, at the same time a wide margin for probable contingencies or losses. If not already done, finish at once the planting out of Carnations and Pinks, bearing in mind that, if this is done now, they are more likely to lace well than when planted in spring. Attend carefully to the various routine operations connected with the pleasure grounds. On account of the long-continued draught, mowing will be but little required; while the broom will be found to be in greater requisition than ever, as the "sere and yellow leaf" already litters the lawns and walks, and must, of course, be removed every morning if order and neatness are to be preserved.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

The Manetti forms an excellent stock for many kinds of Roses, but it does not suit Maréchal Niel, on heavy soils so well as the Briar. Hybrid Perpetuals, however, do well on it, and I have some very good pot Roses on it. In all cases I have found the Manetti stock better suited for light soils than for heavy ones. I have Gloire de Dijon in pots, budded on the Briar, and then Maréchal Niel budded on that; the Maréchal thus treated, forms a beautiful bush, and flowers freely. From this union I have been cutting good blooms all through the season, and I can thoroughly recommend Maréchal Niel as a pot Rose, "worked" in this manner. After trying many stocks, I have found the Briar to be the best for general use; in the case of the Maréchal, provided care is taken not to prune him in too freely, a good succession of beautiful yellow Roses may be kept up all through the season. Continue to give plenty of water to Roses in general, out of doors, while the weather is so dry; where they are planted in shrubberies or close to plantations, this is especially necessary, as the surrounding vegetation deprives them of moisture, rendering them unable to make flowering wood for the following season. Dust a little sulphur on all trees on which mildew makes its appearance.—H. G.

Indoor Plant Department.

The most attractive flowering plants in conservatories at present are the different varieties of Liliun speciosum, Vallota purpurea, the good old, but often neglected, Rochea falcata, and the still scarcer Griffinia hyacinthina. If these things are grown well in sufficient quantities, intermixed with the general occupants of the conservatory, they will keep up a display for five or six weeks, especially if a portion of the stock is retarded by being placed where it will receive comparatively little sun and abundance of air. See that all these things receive regular attention as regards water, as any omission in this matter will make short work of the blooms, and in the case of Lilies will destroy the foliage. Keep a good look-out for that most destructive of all plant pests—red spider. If allowed to establish itself even thus late in the year, it does irreparable damage for another season, by premature destruction of the foliage of any plant which it happens to attack. Chrysanthemums will now require rich and copious waterings twice a-day, if the weather continues dry, and their pots filled with roots, as they ought to be by this time. Syringe them overhead in the evenings of bright days; if this is attended to they rarely get infested with greenfly. Pay every attention to winter-flowering plants, such as Cinerarias, Primulas, Euphorbias, Poinsettias, Bouvardias, Salvias, &c.; the more stout and robust these plants are now, the better they will bloom, provided they are well ripened. If Poinsettias and Euphorbia jacquiniæflora have been placed in a cooler situation during the present month than they have previously occupied, they should be removed from such a position before the nights become too cold, or both leaves and roots will suffer, which will be fatal to their blooming. All the occupants of the stove and intermediate house that have been used for conservatory decoration during summer months will soon have to be removed to warmer quarters, otherwise they will be injured. Achimenes, Tydæas, Gesneras, and Gloxinias, should soon be dried off and put to rest, placing them in a situation free from damp, where the temperature will not get lower than 50°, otherwise they are in danger of rotting. Eucharis amazonica will soon require to be placed in a warmer temperature than that of the conservatory, or it will suffer. If a late sowing of Asters has been made, with a view to their being potted for conservatory decoration when coming into flower about the end of next month, provision should be made for covering the bed with loose lights to protect them. See that such things as Acacias and Cytisus are fully exposed to the sun in an open situation, for the better they get hardened out of doors the more satisfactory will be their blooming. Put in another batch of

Hydrangea cuttings; these will bloom late in the summer if kept cool during the spring, and will come in when flowering plants are scarce. Attend well to herbaceous Calceolarias, so as to get the plants stout and strong; by this means they get so much better through the winter. Conservatory climbers should now be regulated, reducing freely all excessive growth, so as to allow of its being sufficiently thin for each plant to get thoroughly ripened before the short days are upon us.

Orchids.

These generally require less shade and water at this than at other seasons, and now is a good time to overhaul and re-arrange the entire collection, after having first cleaned the glass, wood-work, and benches. It is particularly desirable that the glass should be kept clean, as all the light it is possible to obtain during the winter months in our climate is small in proportion to what is desirable for Orchids, and to which nearly all of them are subjected in their native habitats. Abundance of light and air exert a wonderful influence in ripening up the growths and pseudo-bulbs; and one of the consequences of this is that the flowers produced are not only larger and of better substance than they otherwise would be, but also much brighter in colour. Calanthes should have plenty of tepid water at the root, and be kept near the glass in a warm equable temperature. Their foliage is very apt to become spotted and disfigured unless carefully protected from cold draughts. Few Orchids are more easily grown, or yield better results than these, but even slightly irregular treatment with regard to either heat or moisture will ruin them for a season at least. Pleiones do best on shelves near the glass, whence they can, however, be brought down nearer the eye when in bloom. The surface of the pots should be carefully examined for slugs, woodlice, and other pests of that kind, the best time to do this being at night, with a bull's-eye lantern. During the daytime they hide under the pots or among the compost. Slugs are frequently very troublesome, as they seem to prefer the fresh succulent flower-spikes to leaves, and in this way they soon commit a great amount of damage unless constantly kept in check.—F. W. BURBIDGE.

Indoor Fruit Department.

We have now arrived at the kindest growing part of the season as regards Pines, so that little trouble or anxiety is necessary in that direction. Fruit will colour freely by the application of abundance of light and air, and the withholding of humidity. Swelling fruit requires applications of tepid clear manure-water, kindly applications in suitable weather of atmospheric humidity, and the interior atmosphere charged with ammonia. Give air freely by day, and use no shading. From plants now showing flower, atmospheric moisture should be withheld till after they have bloomed, after which apply it freely. Plants intended to show fruit in October and November should now be aired freely, night and day, humidity being withheld, and root waterings not too freely applied; but never let them be famished for lack of water, or they will produce weak and abortive fruit. Plants intended to rest and harden in October and November for starting into fruit in December and January next, should have every encouragement in the way of applications of tepid manure-water at the root. Succession plants will have arrived at the very best part of their growing season, and will require previous instructions to be fully carried out, and the night atmosphere reduced somewhat as the days decrease. The application of abundance of air in maintaining healthiness and a robust growth, abundance of heat, air, and humidity, and no shading, are sure to ensure all that can be wished. Suckers, of course, should be taken off and potted at once; to grow on, without loss of time or check, is the only way to succeed in always having at command fine healthy plants, in every stage, at all seasons. The foliage of the Vines in the early house will now be getting ripe and falling, and the Vines may be pruned and dressed for forcing in November. Vines in pots for early forcing may be placed out of doors, and the pots should be laid on their sides in very wet weather, to prevent the roots from being too much drenched before they are taken into the forcing houses. Late Vineries, wherein Grapes are ripening, should have plenty of air in favourable weather. All outside borders should, if possible, be covered with lights, or wooden shutters, to keep them dry, before the cold autumn rains chill the roots. The crops of Peaches and Nectarines in the late houses will now be nearly all ripe, and when the fruit is all gathered the trees must be well syringed with soft-soap, or Gishurst compound, to prevent the brown scale from attacking the wood. The trees in the early houses which have ripened their wood may now have the foliage brushed off with a new broom, and the wood loosened from the trellis. Now is a good time to get a store of turfy loam stacked up to keep it dry, should the planting of Peach and Nectarine trees be decided on in October or November, either for

out-of-doors or in the houses. Peach and Nectarine trees do best in good fresh turfy loam without the addition of manure of any kind in the soil, as it only makes them produce strong watery shoots, which never ripen well. Of all things to be avoided in the soil is old rotten tan, vegetable mould, or any material containing pieces of rotten sticks, for they all breed Fungi; and, when they attack the roots of Peach trees they are soon totally unproductive. The roots of Vines are likewise liable to be attacked by them, and the failure in crops of Grapes from root Fungi is often attributed to some other cause. When the fruit is all gathered from the trees in pots in orchard houses, the pots may be placed out of doors, and, if they are plunged in some warm corner, it will save some watering. The late crops of Peaches and Nectarines, Plums, and so on, will want a thorough watering now to swell the fruit. In cool orchard houses some of the late varieties of Peaches and Plums can be kept later than those on the walls or open borders. Too much syringing will now be injurious to late Cucumber plants, as the sun's heat will be gradually declining. If thrips put in an appearance, remove the infested leaves, which are generally the old ones, and fumigate two or three times, at intervals of four or five days, till these pests are conquered. Mildew will sometimes attack Cucumbers in frames or damp pits, and flowers of sulphur must be applied till it disappears. The plants intended for the winter supply must now be planted in the house or pit as early in the month as possible, on purpose to get them strong before the short days set in.

Hardy Fruit.

One of the most useful fruits in the garden is the autumnal Raspberry. It is one of those fruits which emphatically pay for culture; but, as often seen, they are hardly worth a moment's attention. To bear fine luscious fruit the plants must have good preparation and proper treatment. By the first I mean a deep rich soil with a foot of farm-yard manure incorporated with it. The strain upon plant life reaches its maximum in autumn; the sun does its best to exhaust as well as mature, and, unless the roots are duly fortified, the plants will be likely to succumb to its exhausting, as well as yield to its consolidating, force; but, with depth of root-run, the plants flourish, for depth of tilth supplies the needs of plant-food and water. These require to be well supplied when plants have not only to ripen but grow, and bear a full crop of juicy fruit, such as Raspberries in the autumn. Having duly prepared for the wants of the plants, the next point is to duly qualify the plants themselves for their work. The old name of Double-bearing has proved most mischievous, inasmuch as it has led the cultivator to expect two crops a-year from his Raspberries; and so he may, if size and quality are no object; but if they are, then he must take but one crop only. As soon as this is gathered, which may not be till the middle or end of November, cut the plants level with the ground, leave no wood, old or new; top dress the stools with rich manure, and leave all bare till the spring. When the young shoots appear, select from three to nine, according to their size, strength, distance apart, &c.; and if the growth is moderate and the garden tolerably well sheltered, allow them to grow as they choose, without tying; but if not, and there is danger of breakage from wind, then tie loosely for the sake of safety, and so that sun and air may freely reach all sides of the young shoots. Canes thus treated will soon break into branchlets, fruiting all over, and from the middle of September, in suitable localities, till caught by the frost, excellent Raspberries may be gathered. The active vital force of the plant is thus concentrated, as it ought to be, into its autumnal crop, and the crop is good accordingly. Should dry weather ensue, water copiously, for the Raspberry likes water, and, if seasoned with guano, or other manure in solution, better still, for the plant is a gross feeder, especially when laden with fruit. Cultivators are much indebted to Mr. Rivers, of Sawbridgeworth, for improved varieties of these autumnal fruiting Raspberries. His autumn Black and large Orange are valuable plants; the first, however, does not produce many suckers, but comes pretty true from seed. The October Red and Yellow are likewise great improvements on the old Double-bearing Raspberry, and have the blood and much of the quality in them of the well-known and justly prized Fastolf. Cultivators who have not these useful Raspberries, should prepare a piece of ground at once, and plant early in November, cutting the canes in February or March, and thus lay the foundation for fruit next autumn.—D. T. FISH.

The Kitchen Garden.

Now is the time to push on the main crops of Celery with frequent soakings of liquid manure; as, during the longer cooler nights of approaching autumn, the growth will be rapid and crisp if well fed. All early crops should now have a final flooding of water, and be earthed up, pressing the soil firmly round the plants; but, of course,

not burying the hearts. Referring, for a moment, to the question of earthing-up Celery, my own experience would lead me to recommend this to be done, as far as possible, at one operation only. I never could see that earthing-up added anything to its growth, but it certainly is a bar to the free application of water, so necessary to the full development of a marsh plant like Celery. Rather than recommend the plan of earthing-up by small instalments, I should advise heavy mulchings of short manure amongst the plants to check evaporation during the growing season, and at the proper time, of course selecting a dry day, earthing up to the requisite height at once. Now that the weather has apparently set in dry again, late Peas must be well supplied with water to assist them in setting and swelling their crops. Prepare a bed for French Beans in any spare pit or frame; if a little bottom-heat can be provided by working up an exhausted hot-bed with a little fresh stable dung so much the better. This sowing will probably come in usefully during the autumn, after those in the open air are cut off by frost; dwarf early kinds, like Osborn's Forcing, or Newington Wonder, are best for this crop. Plant them in rows 15 inches apart, and the Beans should be about 3 or 4 inches apart in the rows. Dust young Cabbage plants freely with soot or lime to banish the fly which will, perhaps, be troublesome. If the plants are at all thick in the seed-bed, thin them out, and transplant the thinnings about 3 inches apart, so that all may grow up strong and short in the leg. Look Tomatoes over frequently to remove all superfluous growths, and to gather the ripe fruit. A good soaking of water, if the weather continues dry, will be beneficial, at the same time keeping them closely mulched. Sow French Breakfast, White and Red Turnip, and the Black Spanish Radishes in light rich soil. Make another sowing of Brown Cos and other hardy kinds of Lettuce for winter on a south border. After this date Cauliflowers will be better sown thinly under glass, those plants just coming up in the open border must have frequent dustings with lime and soot. Sow Chervil for the last time, and do not forget to have a box or two filled to take under cover when bad weather comes. Transplant a good breadth of Lettuce and Endive for winter, and there is no occasion to plant all in one aspect, but, rather the reverse, so as to be prepared for any weather. Keep up the necessary successions of small salading, according to the demand. This is the best time to gather the various kinds of vegetables for pickling; and also for drying such herbs as Basil, Marjoram, &c.; they may be dried well in the Vineries, laid on sheets of paper under the shade of the Vines, to be afterwards kept in wide-mouthed bottles, closely corked. Thin late sown Turnips to about a foot apart. Maintain a loose friable surface among growing crops by frequent stirring. Weeds are much easier destroyed when small; therefore keep the hoe going freely; every inch of bare surface should be loosened up.—E. HOBDAV.

Moles in Cutting Beds.—Of all garden pests, I know of none that can equal the mole in the production of annoyance. It is not so much a destructive animal as a nuisance, and as for the good it is said to do, if its food consists mainly of the harmless earth-worms, then I question its usefulness in any degree. If one of them starts a run amongst a plot of Potatoes, Cabbages, or other established vegetables, it cannot do much harm, except when very dry weather prevails, and then the soil is drained rather too freely; but when one gets in a seed-bed or amongst flowers, or, as one did with me the other night, amongst a large bed of Pansy cuttings, it does a deal of mischief. When in a nice loose moist soil, such as my cutting bed, it runs hither and thither with the most disastrous results; and the work of days is in an hour almost entirely destroyed. In this special case I had just replaced the cuttings, and made all ship-shape, when my sable friend commenced working again, and I at once dug him out. In such cases it is no good to attempt trapping moles. The best mode of dealing with them is to have a small fork in hand, and watch; then seize the favourable moment, and give the subterranean worker a quick lift out of the ground.—A. D.

A Valuable Recipe.—The *Journal of Chemistry* publishes a recipe for the destruction of insects, which, if it be one-half as efficacious as it is stated to be, will prove invaluable. Hot alum water is a recent suggestion as an insecticide. It will destroy red and black ants, cockroaches, spiders, chintz bugs, and all the crawling pests which infest our houses. Take two pounds of alum and dissolve it in three or four quarts of boiling water; let it stand on the fire till the alum disappears; apply it with a brush, while nearly boiling hot, to every joint and crevice in your closets, bedsteads, pantry-shelves, and the like. Brush the crevices in the floor of the skirting or mop boards, if you suspect that they harbour vermin. If, in white-washing a ceiling, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in cool alum water.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ROSES OF 1874.

By S. REYNOLDS HOLE.

(Continued from p. 165.)

IN Connemara, with the great Diamond Mountain, in all its solemn majestic dignity, before me, as I look through the window and over the Fuchsias of Casson's tidy little inn at Letterfrack, in the land of the Shamrock, sitting down to write about the Rose—going back in thought upon that telegraph of the imagination, which makes the operations of the electric wires seem halt and hampered, through the magnificent scenery of the Twelve Pins, by Lough Corrib to Galway; and thence, straight as a line, through Ireland, over the sea (with a shudder as I recall the exhibition of sickly men which I saw six days ago upon the deck of the steamer Connaught!) to Holyhead, home, and the Roses! And, though I have seen so much that is beautiful, and so little that is horticultural,* how distinctly, in all their vivid loveliness, those Roses gleam! for every true gardener carries with him, as every true lover the miniature of his absent love, a likeness of his garden—painted, not merely photographed, upon memory, in form and colouring complete. Yes, I can see my Rose trees just as I left them, and can tell my readers of their recent failure or success as accurately as though I took, like Alphonse Karr, an actual tour round my garden, and wrote, like Gluck, out of doors.† Returning, accordingly, to my alphabetical review of the Roses, as I have seen them in my own garden and elsewhere in the summer of 1874, and recurring to the letter G, I would observe that only Dijon has maintained its Glory. The Glory of Bordeaux has not been La Rose in the garden, whatever it may be among the Vines. The Glory of Santenay, and of Vitry also, have paled their ineffectual fire. Henri Ledechaux has been very good with me, and is now an established favourite; and Horace Vernet has displayed a variety of military and sanguinary scarlet and crimson tints, which would have gladdened his namesake's heart. John Hopper has shown, by his dusty and disordered raiment (I mean by the mildew on his crumpled leaves), that he has had a close tussle with John Frost, but he has "come up smiling," in pugilistic phrase, and with victory written upon his handsome face. Never, since I gave half-a-guinea for Jules Margottin (it must be twenty years ago), have I seen that Rose so dwindled and discomfited, but it must still be retained in every collection as an excellent garden Rose. La Belle Lyonnaise made her *début* a little too late, and if, as the Irishman remarked, she had only been born before her mother, she would have made a sensation. She has, nevertheless, many charms of her own, though we may not notice them, when we meet her side by side with her mamma—Gloire de Dijon; and, where the Rosarian is rich in walls, the Beauty of Lyons should find a place. And now for the Rose, which must, I think, claim the premier prize for the quantity and quality of its blooms, in this untoward season, and which Guillot, fils, had the good fortune to send out, in the year 1867, and the good taste, as a true Frenchman, to name La France. Reader, do you remember how the slim delicate "swells" of Rotten Row distinguished themselves, half froze and half starved, in the trenches before Sebastapool, and how some said, when the war-news reached us, "There's something in 'blood' after all!" So has it proved with this high-bred beauty. She has stood cold and heat, to which the luxuriant and obese have succumbed, and has emerged from adversities (so may La France herself come forth from her trials) with a sweet and graceful beauty. I must next select from the L division, as one of the best Roses of the year, Louis Van Houtte, rightly named after the great

florist of Ghent, and admirable as a well-shaped dark crimson Rose. We have to thank Lacharme for this acquisition. And now we must take off our hats to a procession of ladies—*mesdames et mesdemoiselles*—glowing, radiant, as those who wait upon our Queen at a drawing-room; but in this superior, that every blush is real, that upon their cheeks there is neither rouge nor pearl-powder, and that the gloss upon their foliage knows no oil. The first I would select (still following the principle of "The A B C Guide") is Madame Berard, like La Belle Lyonnaise, a daughter of Gloire de Dijon, but distinct in its rich Apricot colouring. It was sent to me by my friend, Mr. Prince, of Oxford, and grows luxuriantly upon the seedling Briar. Mesdames Boll, Bravy, Caillat, Crapelet, and Charles Wood, have resented the rude insolence of Mr. Vernal Frost, either by declining to come out altogether, or by publicly wearing the shabbiest dresses in their wardrobe—raiment much resembling that of the individual referred to in the great epic of "The House that Jack built," who took advantage of the heroine's forlorn condition for osculatory advances, which led to matrimony. Not one of them have I seen in her Sunday clothes; but it has not been so with all the sisterhood. Just as you may see in this humid island fair ladies come ashore with their lords from fishing, after they have been overtaken by drenching showers, or exposed to cold boisterous winds, looking all the bonnier and brighter for the storm, so Madame Clemence Joigneaux, whose praises I have so often sung, has bloomed this season, as though May had been all that those gay deceivers, the old English poets, describe it—shepherds flirting, in silk stockings and pumps, to shepherdesses in book muslin and blue ribbons, by purling streams and under cloudless skies, in a climate where catarrhs were unknown. Were I permitted to grow but half-a-dozen Roses, this hardy, honest, buxom beauty, whom age cannot wither, should certainly be one of the six; and, were I called upon to name the remaining quintette, I should elect Gloire de Dijon (for its semperflorant qualities), the Baroness, La France, Marie Beaumann, and Maréchal Niel. Resuming our "dream of fair women," I have been much delighted to see a Rose, which has almost gone out of cultivation, because, owing to a delicate constitution, it is so seldom realised, blooming beautifully in this untoward season—I mean Madame Furtado, which has been one of the best in my rosarium, growing upon the seedling Briar. Concerning this stock, as a nurse and mother of Roses, I promised and hoped, having used it largely, to make this summer a comprehensive statement, but the severity of the weather has rendered it impossible to gauge or compare its capabilities. I still retain my confidence in its superiority, and I believe that Rose trees, thus established, will prove to be the most enduring of all. The process is slow; and, should the nurserymen adopt it, they must raise the price of their Rose trees, but these will be in the end much cheaper to the purchaser than the standards and half-standards which, violently pulled out of hedgerows, rarely live long in the garden. As to the fair Madame Lacharme, with her delicate complexion, I am afraid that our ordinary summers will be too severe for her (as for Miss Ingram and many other of our most charming Roses), but in one of those exceptional and glorious seasons, when there is no winter in our spring, and when the heat of our summer is tempered by refreshing showers, I shall expect to see a vision of beauty in the Rose called Madame Lacharme. The lovely Madame Therese Levet has suffered severely, and Madame Victor Verdier also, but her daughter, Mademoiselle Eugenie Verdier, has realised most of her charms; and another young lady, Mademoiselle Marguerite Dombrain, has sustained small hurt from the storm. Marguerite de St. Amand, though much reduced in her proportions, has been a most interesting invalid; and last, but not least, of the ladies, Marquise de Castellane and Marie Beaumann have both been excellent. Maréchal Niel, upon the border and upon walls looking east, has been unusually grand and glowing, and brave old Maréchal Vaillant has once more shown himself worthy of his ancient fame. Nardy Frères and Paul Neron have both profitted from their "robust habit," and have given us substantial proof of it. A large bed of the latter variety is invaluable for supplying cut Roses. Senateur Vaisse, like some other members of Parliament, has not distinguished himself

* I may have something to say hereafter of the gardens which I saw in Ireland.

† It is said that Gluck had his piano carried into the most picturesque spot he could find; and there, with waving trees, and wild flowers, and singing birds (and, softly be it spoken, a bottle of Champagne!) around him, composed his beautiful melodies.

this session; nor, as I look through my list to its close, do I see any other Rose, except Xavier Olibo, which has not evinced melancholy evidence of vernal and æstival adversities.

So we will leave our old favourites, with a sigh and a tear, and refresh ourselves with a look at the new Roses.

(To be continued.)

THE DECAY AND SPOILIATION OF THE CRYSTAL PALACE GARDENS.

MOVED by Mr. Scott Russell's report we visited the Crystal Palace gardens during the past week with a view of examining their condition. We found the ruin appalling and apparently beyond repair. In its best days there was a good deal of the Palace gardens which no one with any artistic insight into landscape gardening could admire. All the geometrical gardening below the upper terrace was a gigantic mistake, resulting from an unfortunate desire to outrival the stony glories of Versailles, and the many arid triumphs of Continental gardens. The great fountains and fountain-basins cost hundreds of thousands of pounds, and, combined with such barbarisms as water temples and Rose temples, too high for the tallest Roses to scramble over, made hideous what might have been easily made the finest garden-landscape in England. At this moment much of this part of the grounds presents a most hideous ruin. The enormous and ugly fountain-lakes with their miles of huge iron piping, like sea-serpents stranded in muddy waters, are now rendered more offensive than ever by the foul-looking water having fallen low from the banks, and by the almost unaccountable ruin of the water temples and colonnades. The enormous cascades have not played for eleven years; a fitting result of the waste of precious means in such ignoble masonry. In its best days all this showy water tossing had not as much beauty as a mountain streamlet; now it is the most lamentable sight we have ever witnessed in a public garden. We question very much if any reader would or could imagine the disgrace to which these vast works have come without personally examining them. Let us turn aside and seek for a little relief in those parts of the garden devoted to trees and flowers. In what might be a quiet verdant spot, a board announces—"To the stalactite cave: admission, one penny." On entering, the "stalactites" are found to be white-washed, and most effectively whitewashed! The large collection of vulgar noisy swings, &c., &c., which occupy a considerable space in what might be a very charming part of the grounds, is in good keeping with this whitewashed stalactite cave. But is the garden of the "People's Palace" at Sydenham the place for exhibiting the commonest features of Bartholomew or Donnybrook fairs? Surely every part of these noble grounds might be occupied with something much more attractive and beautiful to the very commonest people than these wretched toy railways, &c., and not offensive to any. Such features are sufficient to spoil even a decent tea-garden, but the worst has yet to be told. The one thing for which those with feeling for the beautiful in landscape gardening always felt grateful to Paxton, was the belt of beautiful plantation that so gracefully cut off the grounds from the chimney-pots around. This plantation was formed at a cost of many thousands of pounds, and contained specimens of nearly all that was beautiful in the trees and shrubs of northern and temperate regions; when wearied with the crater-like dreariness of the great stony region, one could lift the eye to this splendid belt of vegetation, and therein find rest. Often, when tired of the more showy attractions of the Palace, we have walked round this noble plantation, admiring tree after tree, of many of which no such good specimens were elsewhere to be seen about London. So careful were the original projectors of the Crystal Palace to secure that first principle in landscape gardening—a quiet boundary to frame their garden picture—that they bought a great deal of the land around, and laid it out in large well-planted villa gardens, with a view of preventing, as far as possible, all intrusion of houses on their paradise. Then the noble plantation above-mentioned was formed, and so well, that for many years it was the chief garden charm of the place. *This plantation has been almost*

entirely cut down, and long lines of red villas stare into the garden in its place. The consequence is, that the beauty and repose of the garden landscape is destroyed. And to what end? For the gain of about £1,200 a year (the ground rent of these villas) the grounds have sustained a loss which no money can repair. The present expenses of the Company amount to £109,000 a year, and for a miserable gain of little more than a thousand a year, the Company has damaged the gardens in the most effective way possible. One unhappily sees many instances of poor design in public gardens, and of noble surfaces of garden-ground frittered away to unmeaning and tormenting ends, like the gardens at South Kensington, but of blind destructiveness or rank *bêtise* in the direction of a great public garden, we have never witnessed such an instance. As for the indoor collections, the great fire and various other causes have long ruined these; but, before it took place, the fine collection of Camellias and Oranges, and the many superb plants purchased from the Loddiges, had, for the most part, perished from sheer neglect.

Lilium pomponium.—As far as my observations go, the true *Lilium pomponium* of Grenier and Godron, is not known to English cultivators, although the name occurs in most nurserymen's catalogues. There seems to be much confusion between *L. pomponium* and *L. pyrenaicum*, the latter species being almost invariably sold by nurserymen for *pomponium*. In June, 1872, I dug up two roots of a Lily in the Maritime Alps, which have flowered with me this year, and are the true *Lilium pomponium* of Linneus, and of Grenier and Godron. It is a much handsomer species than the plant generally cultivated under the name, which is merely a red variety of *L. pyrenaicum*. *L. pomponium* of the Maritime Alps is easily distinguished from *L. pyrenaicum*, by its strictly linear and very narrow leaves, which have no tendency to be lanceolate. The flowers are considerably larger, and instead of being dull red in colour, are of a clear scarlet, approaching *Chalcedonicum* in size and colour, though a trifle darker; the bases of the perianth segments are covered with warty protuberances, and the anthers are disproportionately large, and quite twice the size of those of *L. pyrenaicum*. *L. pomponium* seems to be tolerably frequent in the Maritime Alps, though confined to a limited range in the district surrounding Nice. *L. pyrenaicum* has, I believe, not been found west of the Pyrenees, excepting in the Devonshire habitat, near South Molton, where I observed it in 1852, apparently wild. I still have it in cultivation, and it differs slightly in habit from the species obtained in the Pyrenees.—GEORGE MAW.

Exhibiting Roses.—During the last few weeks a spirited controversy has been carried on in the horticultural and gardening papers as to the best way of exhibiting Roses. The gauntlet was thrown down by the redoubtable Mr. William Paul, who exhibited a collection of 6,000 trusses in groups, and arranged in geometrical patterns according to colours. Under certain conditions we can see no objection to a great Rose grower exhibiting the superabundant riches of his gardens in this way; and in our opinion it is certainly an advance on the usual way of exhibiting the same masses of flowers in rectangular green boxes margined with ragged Moss. Such a blaze of symmetrical beauty reminded one of a royal night at the Opera in comparison with a "Foresters' Day" at the Crystal Palace, or the "Hallelujah Chorus" after an energetic German band. When masses are at hand who can object to their being arranged in pleasing forms? Geometrical patterns are not objected to in flower beds, or Roses in wreaths, and in both of these the individual forms of the flowers are lost. We incline to the opinion that both disputants are more or less in the right, for whilst Roses are perfectly lovely when arranged in devices or scrolls, they are equally (or still more) lovely when isolated. But because the isolated face of one of Raphael's heavenly Madonnas transfixes us by its unearthly beauty, is that any reason why we should rip up Michael Angelo's "Last Judgment"? Because we are charmed by Mozart's "Minuet," are we not to be spellbound by the involved beauties of Beethoven's "Pastoral Symphony"? There can be no doubt that, to æsthetically enjoy Roses the flowers should be isolated, so that every quality of the bloom is made manifest; and to most Rosarians we imagine that ten perfect flowers would be more satisfying than 10,000. We have had more mental enjoyment whilst contemplating three or four perfect Roses on our own table than in all the "Rose shows" at South Kensington. One is like classical chamber music, the other like a contest of brass bands at the Crystal Palace. We must take Roses for their own value, and they are never so exquisite as when seen singly in slight transparent flower-glasses, as used for the table; but when they are wanted in masses, pray let us give a preference to pleasant curved lines over square deal boxes.—W. G. S., in *Floral Magazine*.

NOTES OF THE WEEK.

--- WE are at a loss to understand the motives which prevented the fruit committee at Kensington from giving a certificate to the excellent and distinct Melon brought from Africa by Sir S. Baker, and grown by Mr. Groom, at Henham Hall Gardens, particularly as we know not a few of the best judges on the committee pronounced the Melon the best flavoured they had ever tasted. The stated reason was that the fruit was "rough and coarse," to which we wholly demur. If increase of size is accompanied by deficiency of flavour in a fruit than it may be termed "coarse," but when the flavour is actually better, such a decision seems a puerile one. Perhaps the committee do not like such a deviation from the shape of the nice round little Melons they are accustomed to. To us, however, it seemed a much handsomer fruit than the common type.

--- M. JEAN SISLEY writes to say that the great Rose show, which was to have taken place at Lyons in July last, and which was postponed on account of the hail storm that occurred on the 21st of June, will take place at the same time as the general exhibition of the Association Horticole Lyonnaise, which will be held on the 17th, 18th, 19th, and 20th of September, in the park at Lyons. A special jury of English, Belgian, Swiss, and Parisian Rosarians will judge the new Roses, which, it is expected, will be numerous and fine.

--- WE are informed that M. Max Leichtlin has just returned from Montenegro, and that he has brought with him a large quantity of the purple Lily (*L. Cattanii* or *L. Martagon dalmaticum*). He is also in possession of supplies of the famous *Tulipa Greigii*, one of the most remarkable hardy plants ever introduced, and of a Sparaxis-like Cape bulb, the *Freesia Leichtliniana* (Klatt.), with yellow and orange-coloured flowers deliciously scented, all desirable plants, which we may soon expect to see in our leading nurserymen's lists.

--- AT last, in order to meet the requirements of the market gardeners and the salesmen at Covent Garden Market, his Grace the Duke of Bedford has given instructions to Messrs Cubitt, builders and contractors, to erect a roofing over the south wing, similar to that which covers the vegetable market on the north side. During the past week workmen have been engaged in erecting a large trolley for the purpose of carrying out the work. This may save a small portion of the busy multitude of porters and others from the heavy winter rains. London has now some of the finest markets in the world: when shall we see a fruit, vegetable, and flower market worthy of it?

--- THE Hollyhock disease, produced by the attacks of *Puccinia malvacearum*, has, according to the *Florist*, been successfully grappled with by Messrs. Downie, Laird, & Laing, by alternate applications of Gishurst compound and flowers of sulphur. The Gishurst was first applied at the strength of a shilling box, to 12 gallons of water, followed the next day or so by a good syringing, and subsequent application of sulphur, through one of Pooley's distributors. These two distinct operations were performed twice a week, the Gishurst being gradually increased in strength to a three-shilling box to 12 gallons of water, which is a very strong dose, and perhaps more powerful than is necessary. In this way a cure was effected, and the plants are now clean and free from the disease, and growing away well, considering the heat and absence of rain.

--- FROM Mr. Culverwell, of Thorpe Perrow, Bedale, we have received a cut spray of *Tropæolum speciosum*, loaded with crimson-scarlet blossoms. This species he finds most useful in an ornamental point of view when allowed to over-run neighbouring shrubs, as for instance, the *Rhododendron*, and the soil that suits the one does for the other. Now, he says, is a good time for planting it, if strong plants for flowering next season are required; and, he adds, that most of the Scotch nurserymen keep it for sale in pots. It is better suited for bushes than walls, as in winter it leaves a blank on the latter; it may also be grown and staked like Peas where screens or blinds are desired. Many have expressed an opinion that it grows nowhere but in Scotland, which is a mistake; country makes no difference, provided it has a moist peaty soil to grow in. It grows and flowers well on walls at Barningham Park, the summer residence of Mark Millbank, Esq., in the north of Yorkshire.

--- IN confirmation of Mr. M'Nab's remarks (see p. 193) on the Indian Garland flower (*Hedychium Gardnerianum*) Mr. Howell, of Heligan, Cornwall, informs us that he has a specimen of it which was planted out-of-doors six or eight years ago, and which is now bearing fifty heads of flower in different stages of growth, besides shoots not sufficiently advanced to indicate whether they will flower or not. The strongest shoots are about 6 feet 6 inches in length and are very stout at the base. It is planted in a small border at the west end of a plant stove where it receives no other protection than that which the house affords. It remained, he says, quite green all last winter, the old shoots only being cut out in spring when the young ones were a foot high. The flowers are beautifully scented. At the other end of

the house there is, it is stated, a noble specimen of the Coral tree (*Erythrina Cristo-galli*) on which there are some forty-five fine spikes of flower.

--- MR. WARE has sent us some fine blooms of *Cyclobothra lutea* which he says is flowering freely in the open border at Tottenham, and which is likely to become a useful autumnal plant.

--- WE have received examples of Blyde's patent flower or fruit-gathering scissors, which cut and retain the flower or branch at the same time. For cutting either flowers or fruit they will be found very handy; they are simple in construction and moderate in price.

--- MR. VOICE, of Horley, sends us examples of his screws for tightening trellis or light fencing wires. They are cheap, and may be readily used by any ordinary workman; indeed, they constitute one of the simplest and most effective of raidisseurs.

--- WE have received a copy of "The Rural Life of Shakespeare," by Mr. Roach Smith; a highly interesting pamphlet, containing, in a handy form, nearly all the passages from the poet's works, in which allusion is made to objects of natural history.

--- WITH reference to our remarks on Chinese gardening (see p. 200), Mr. Hanbury writes to us as follows:—"Chinese gardening is, he says, in a very primitive state, in spite of the poetical name given to the whole country, viz., "the flowery land." The Chinese are clever in dwarfing shrubs and fruit trees, and in making miniature lakes and artificial rock-work, but that is about all that can be said. I never met a Chinaman who, in our sense of the word, was either a fair botanist or a passable gardener.

--- THE last number of the *Botanical Magazine* contains coloured figures of the following new or rare plants, viz.:—*Iris tectorum*, a native of Japan, having large blue or bluish-purple flowers. It flowered recently with Mr. Bull, who had it under the name of *I. tomiolophia*. *Bolbophyllum Dayanum*, a large flowered species from Moulmein, similar in habit to *B. cupreum*. The flowers are greenish, blotched and spotted with reddish-brown, the segments being fringed with long hairs. *Cinnamodendron corticosum*, or Mountain Cinnamon of Jamaica, a West Indian tree having bright green leaves and axillary clusters of small bright orange-scarlet flowers; *Drosera Whittakerii*, a dense dwarf-growing plant from South Australia having large white solitary flowers on scapes about 2 inches in height; *Pentstemon humilis*, a dwarf plant 4 or 5 inches high bearing spikes of showy blue flowers. It is a native of the Rocky Mountains. *Brodiaea volubilis* a plant having a dense head of rosy flowers borne on a twining scape, which sometimes attains the enormous length of 12 feet. It is a native of California.

--- FOR several years past the inhabitants of Soho Square have been vainly endeavouring to obtain power to throw open this square to the general public, but it was found to be impracticable. The fee simple of the property was supposed to be vested in the Duke of Portland, and all attempts to gain either an interview on the subject or the surrender of his lordship's rights having proved futile, a meeting of the inhabitants was convened and a committee formed. Mr. Albert Grant, to whom the public are indebted for Leicester Square, offered to lay out and develop the grounds at an estimated cost of £7,000, and to endow it with an annual income of £150 in the names of a committee to be appointed by the inhabitants. The square was originally known as King's Square, and in the centre stands a monument to Charles II. (in a very dilapidated condition), with four figures at the base, representing the rivers Thames, Severn, Tyne, and Humber. This will be removed at an early period, together with the present shabby rails and shrubs. The square will be surrounded by a sweep of wrought iron railings similar in design to those used in Leicester Square, the ground laid out in flower beds and walks, whilst statues of illustrious men, who, at some time or other, were residents in the district, will be placed at various points, amongst others Evelyn, who in 1690 lived there. At present there is a slight hitch in the acceptance of Mr. Grant's offer, owing to the opposition of a few of the oldest residents, who object on the ground that the contiguity of the square to the Seven Dials will cause it to be the resort of disorderly characters. The orderly conduct, however, of the visitors to Leicester Square, which of the two is nearer to the Dials, quite does away with this objection, and as the custody of the place will really be vested in the Metropolitan Board of Works the bye laws of that body are sufficiently stringent to cope with any danger. Mr. Grant's offer will be brought before the board immediately after the recess. Considering the very doubtful effect of the statues, &c., in Leicester Square we regret that it should be proposed to embellish Soho Square in the same way. In our climate, or in any climate, a building of some kind is the place for marble statues and busts; a garden is best, as a rule, reserved for trees and flowers and Grass. But, even if the square be unwisely and expensively "laid out," all lovers of gardens will be pleased to learn that there is a probability of another of the squares of London being rescued from its present condition of melancholy sliminess.

COMPARATIVE RATES OF GROWTH IN STEMS OF TREE-FERNS.*

By DR. MOORE, F.L.S., &c., Director Botanic Gardens, Glasnevin.

CONSIDERING that well authenticated data concerning the nature and rates of growth of tree-Ferns, would possess a certain amount of interest, I have arranged some notes made from time to time on this subject, on kinds which have come constantly under my observation. At the beginning of the period I purpose to review there were only very few of those beautiful plants introduced to Europe, and even yet, the number cultivated in collections is few, compared with those which are now known and described. The idea which is generally entertained concerning those plants is that they grow very slowly and that the stems of them, which are brought to this country from their native habitats, must have taken a great number of years to attain to the heights of 10 to 12 feet, which are about the largest sizes that are introduced. I have, however, been able to prove that the growths of several of the kinds are by no means so slow as they are supposed to be. We have grown at Glasnevin one species from a spore to a height of 10 feet in less than twenty years. It was, however, one of the most robust and quickest growing among the Australian and Polynesian species, the *Cyathea medularis* (Swartz). When the late Dr. William Harvey visited some of the Polynesian Islands in 1855, he sent to Glasnevin a small packet of the spores of that Fern, or rather the variety of it, which differs from the normal New Zealand form in having more slender fronds, with their ultimate pinnules more divided, along with several minor differences, which have led authors to consider it a distinct species from the New Zealand plant. It is the *Cyathea Mertensiana* of Bongard, which the late Sir William Hooker, in one of his last works, "Synopsis Filicum," treats as a mere variety, differing slightly from the normal type.

A few plants were produced from the spores sent, one of which was grown on as rapidly as possible until 1872, when it had attained a stem 10 feet long in seventeen years. At this period of its growth, owing to some inexplicable cause, it turned sickly, and gradually dwindled away until it died during the present year. There is yet a fine example of the New Zealand form in the Glasnevin collection, which is historically interesting, from being one of the first batch of seedlings of this species raised by the late Messrs. Loddiges, of Hackney, about the year 1844. Another of the same lot perished in the conflagration which took place at the Crystal Palace a few years ago. I have no exact note of the time it came to Glasnevin, but suppose it must have been in 1845, when it was very small. It is now a noble-looking Fern, with a strong stem 11 feet high and fronds from 8 to 10 feet long. These examples afford us a tolerably correct idea of the sizes the stems of this species attain within thirty years. The next species I have reliable information on is that which is generally known in collections as *Alsophila excelsa* (R. Brown), but which I have reason to suspect is *Alsophila Cooperi* (Hooker). There are certainly two very distinct species in the Glasnevin collection, under the specific name *excelsa*, the common Australian kind, and that from Norfolk Island. The latter was grown from spores collected by the late Mr. John Veitch, taken from plants growing on Norfolk Island, and there are also plants in the same collection raised from spores taken from the fronds in the Kew herbarium, from which the late Sir William Hooker described his *Alsophila Cooperi*. I can see no difference between the latter and plants sent from Australia by my brother, Mr. C. Moore, of Sydney, as *A. excelsa*; but there is a great difference between them and the Norfolk Island plants brought by Veitch, which may be the true *A. excelsa* of Brown. The first plant of the Australian kind was sent in a Wardian case to Glasnevin, in 1850, when it had no woody stem, and the fronds only about a foot long, it has now a beautiful clean stem, nearly 12 feet in height under the fronds, which it has made within the last twenty-four years! I have also been able to observe the growth of *Dicksonia antarctica*, from a seedling upwards, to a rather large stem. The plant was obtained in 1840, when it was only about 8 inches high, including fronds; and now it has a strong thick stem fully 5 feet high from the surface of the tub in which it grows to where the head of fronds is. These instances, therefore, show that some of the Australian and Polynesian kinds of tree-Ferns make their stems quicker than has generally been supposed to be the case. There are, however, others of them which, so far as my experience concerning them extends, grow at a much slower rate. One healthy plant of *Alsophila australis* (R. Brown), at Glasnevin, was obtained when a seedling in 1850; and, although it has continued strong and healthy ever since, the rhizomatous stem is only now taking an upright direction. Another plant of the same species, which has been cultivated nearly as many years, has only begun to form an upright stem lately; and it, too, has continued healthy throughout. A further

instance is afforded of the slow progress many of those plants make during the earlier years of their growth, from a plant of *Cyathea dealbata*, which was obtained in 1855, and has grown vigorously ever since; yet the woody stem has only begun to form within the last eighteen months. These, and other similar examples, lead me to believe that many kinds of tree-Ferns make slow progress until their stems form and take an upright position; after which they grow much faster, until they attain a height of 12 or 14 feet, when the growth becomes slower and more consolidated. The observations I have had opportunities of making on South American tree-Ferns are confined to a few species. During the year 1858, the Hon. Judge O'Reilly, then residing in Jamaica, sent us from thence small plants of *Cyathea arborea* (Smith) and *Cyathea aculeata* (Willdenow), in a Wardian case, when they were without hardened stems. They soon began to grow vigorously, and the former has now a clean stem 13 feet high, the latter has one 5½ feet high, which they have made in sixteen years. Examples of the slow increase in height of Fern-stems after they attain a certain height, have been afforded by both Australian and South American kinds; among the latter, I may mention a fine plant of *Cyathea serra* (Willd.), which came to Glasnevin in 1862, from Lady Dorothy Neville's collection at Dangstein, when it had a stem nearly 15 feet high. It has continued in good health ever since, but it has hardly increased 3 feet in twelve years. Among the New Zealand kinds, fine plants of *Dicksonia squarrosa* (Swartz) and *Cyathea dealbata* (Swartz) were obtained in 1868, with stems 6 and 8 feet high. They have both continued in good health ever since, yet their stems have scarcely increased a foot in length in six years. To contrast with these, I may mention a plant of the beautiful *Cyathea princeps* (J. Smith), which has made a stem nearly 7 feet high within fourteen years. The foregoing observations have been made on plants growing in conservatories, to which the public are daily admitted, and, consequently, the atmosphere must necessarily be kept in a much drier state than is favourable to the healthy development of those plants. I have the experience of some fine examples of several of them which are growing in Dr. Hudson's splendid Fernery, near Dublin, at present; and also, those of Mr. Bewley's, where, in both cases, the atmosphere is kept close and moist, and with more shade, under which regime they make quicker growth in a given time than they do in the drier and more exposed conservatories at Glasnevin. The foregoing notes have not, however, been arranged for horticultural purposes, but simply, to afford some reliable data on the progress of the growth those plants really make, about which one hears so many mythical conjectures respecting the great age of their imported stems. I shall, therefore, not enter farther on the horticultural consideration of the question; but, before concluding, I may state my belief, that one-half, at least, of the many fine examples which have been imported during the last twenty years or so, have perished, owing to their being too freely exposed at first, and placed in situations unsuited for them. If they once get thoroughly checked, by being too dry at the roots or stems, they seldom recover, but gradually lose their fronds and die off. In summing up these brief observations, I have first to state, that some of the kinds of tree-Ferns grow with greater rapidity, and form their stems in a much shorter period than is generally supposed to be the case. Secondly: After they attain a certain height, the acrogenous buds are formed much closer together, the one above the other, than they are lower down on the stem, hence, their elongation is much slower. Thirdly: Some of the sorts which at first form short rhizomatous stems, before they take an upright position, require a considerable number of years to perfect the early part of their growth, but after the stem has been formed, and an upright position taken, the growth is much quicker and the elongation advances rather rapidly, compared with what it did while the stem remained in a rhizomatous state.

Considerable discussion followed the reading of this paper.

Dr. Hooker stated that at Kew they had not found their tree-Ferns to grow slower on attaining a height of 15 or 17 feet, as had been stated to be the case in the communication just read. There were some tree-Ferns at Kew nearly 30 feet high, which were growing as fast at that height as they did when only 10 or 12 feet. Dr. Balfour stated that at the Botanic Gardens, Edinburgh, they had resorted to the mulching of their tree-Fern stems with Moss, which had been found beneficial in preserving them from drought, &c.

A Large Flower Bed.—The great central plain of California for six months of the year is a scorched and dust-swept desert. In April it becomes one flower bed nearly 400 miles long and thirty wide, set under a range of snow mountains. A traveller writes of it:—"Go where I would—east, west, north, south—I was still surrounded by flowers which closed over my feet at every step as if I were wading in water."

* Read before the British Association at Belfast.

THE INDOOR GARDEN.

CYCAS REVOLUTA.

OUR illustration represents a fine specimen of this noble and distinct-looking Cycad, which is one of the most stately in the group to which it belongs, and eminently adapted for the decoration of conservatories or winter gardens. It is sufficiently vigorous in constitution to withstand the temperature of a moderately warm greenhouse during winter, and in summer it may be used in the flower garden, massed on the lawn along with Aralias, Ficuses, slender-growing Palms, and numberless other foliage plants of similar habit; while, when in a small state, plants of this species, together with its congener *C. circinalis*, are invaluable for room or balcony gardening. It is, however, as an indoor plant in which its true value consists; and, although one of the oldest of Cycads, it is still one of the best in the whole group. The plant here represented is nearly 8 feet high; and, when such stately dimensions have been attained, it forms an effective object for grouping along with slender Palms, Bamboos, and other plants of a graceful character, in conservatories. It is readily propagated by means of the woody bulb-like masses which are freely borne on dwarf or stunted specimens. They are simply clusters of adventitious buds, that emit roots freely if placed in a pot of light rich compost. B.

HYACINTH CULTIVATION IN POTS AND GLASSES.

SELECT clean healthy-looking bulbs, not large (unless the sort produces a large bulb), but well-ripened heavy bulbs. It must be borne in mind that many varieties having small-sized bulbs very frequently give the best spikes of bloom, and must not be discarded. Procure them early, and do not select from those exposed in shop windows or in open baskets; this treatment sadly detracts from the bulb. The system adopted here is to keep them in bags, as imported, and we have found that the bloom is not deteriorated (although retarded), even if planted in December. The best compost is well-seasoned turfy loam, well broken, but not sifted, mixed with a large proportion of thoroughly decayed manure, and silver or river sand; but if this is not at hand, take any good garden soil, and a good proportion of well-decayed vegetable refuse or manure from an old hot-bed, to which add silver or road sand—in fact, anything to keep the soil porous. Avoid all soils that run together hard, for the more porous the soil, the better the bulbs succeed. If this compost is mixed together two months before it is used it will be all the better.

For Hyacinths in pots, any sized pots will do; we use for general purposes 6-inch or 32's. In potting, place a large crock or potsherd at the bottom for drainage, filling up the pot with compost. Clear the bulb from all offsets and loose parts, and press it into the soil, leaving the apex of the bulb above the surface. Have previously prepared a level plot of ground having a hard bottom of coal ashes, to prevent worms getting into the pots. Place them on this, and give them a good watering to settle the soil. After the surface has become moderately dry, cover the whole with fine coal ashes, old tan, sand, or any other like material, to the depth of 6 inches. Let them remain four or six weeks, so as to get the pots well filled with roots before the foliage starts into growth, as this is one of the most essential points. The time of potting should be regulated according

to the use required, but a succession of bloom may be had from Christmas to the end of April by commencing the second week in September, and continuing every fortnight to the end of December. After the pots are removed from the bed of ashes they should be cleaned from all impurities and gradually inured to light, and introduced into the forcing pit. Give them an abundance of water, and keep them as near the glass as possible. If not required for early purposes, they may be placed on shelves in a cool greenhouse, frame, or window sill, but protected from frost.

Hyacinths in water should be planted in Tye's Hyacinth glasses; fill the glasses previously with water (not from a spring, unless exposed to the air some hours previously), and place the bulb so that the base just touches the water. Then put them in a dark closet for three or four weeks, until the roots have grown some 3 or 4 inches, after which gradually inure them to light, and fill up the glasses with water. A few pieces of charcoal will help to keep the water pure, which it is not necessary to change unless it becomes offensive. Keep the leaves clean. The best position is in a cool room, as near the window as possible, but out of the reach of frost. October is the best month for placing Hyacinths in water. W. CUTBUSH & SONS.



Cycas revoluta.

Hydrangeas in Covent

Garden.—Doubtless some of our readers may have seen the beautiful little plants of *Hydrangea* now being brought into Covent Garden Market by the London market-growers. These plants are propagated from cuttings in the autumn and spring, and flowered in from twelve to fifteen months, bearing from one to four magnificent clusters of rosy blossoms. Some of the largest, or autumn-struck plants, vary from 18 inches to 2 feet across, and are literally one mass of bloom, and invaluable either for window-plants or conservatory decoration. I visited a small market garden at South Acton the other day, and saw a long span-roofed greenhouse quite full of this beautiful plant, while hundreds had already found their way into Covent Garden before my visit. In the turf-pits outside, 4,000 cuttings had been potted off ready for next year's supply; and this in one small establishment only—a fact quite sufficient to show the high estimation in which this plant is held around London. Old plants furnish quantities of fine cuttings, which strike freely in a moderate temperature, after which they are at once potted off in good fibrous loam, leaf-mould, and sand, and placed closely together in any empty space at command. The leading growth is pinched out at the second or third joint, so as to obtain strong bushy plants as dwarf as possible. As the pots become filled with roots, they are again potted-on into 48's, and the larger ones into 32's, and in these they produce their flowers. During summer they are liberally supplied with water, a little manure-water being occasionally added to strengthen their growth. They are kept as near to the glass as possible while growing, and fully exposed to the sun, by which means the plants are kept dwarf and bushy. The aim of the market-grower is to get these plants into the market as early as possible, as a much better price is then obtained. Those now in the metropolitan market sell wholesale at from 24s. to 30s. per dozen, and are eagerly bought up at that price. The market-grower has but little difficulty in disposing of his flowering plants or cut flowers.—B.

Good Double Geraniums.—Have any means been successfully used of dwarfing or of reducing the too succulent and rampant growth of these plants, so as to make them more floriferous? This is much to be desired, as at present they grow too rank and leafy. A list of the best kinds and colours would oblige. I wonder at anyone recommending Laxton's *Aurora*, it is a semi-double useless kind, which I would not grow again. His *Jewel* and *E. J. Lowe* are first-rate.—W. H. B.

THE FRUIT GARDEN.

FRUITS IN LONDON MARKET GARDENS.

The Apple.

APPLES are naturally spreading-headed trees, well suited for standards, and, therefore, mostly grown in that way. They are planted in rows, varying from 15 to 20 feet apart, and they stand from 9 to 12 feet asunder in the row. For ordinary medium-sized trees, 15 feet by 9 feet are perhaps good distances, but I have seen hundreds of trees of Cox's Orange Pippin, a great favourite, in the form of dwarf bushes, on the French Paradise Stock, planted in rows only 6 feet apart each way. Apples are much more cultivated around London than any other sort of fruit tree, as they are more certain bearers than most other kinds of fruit, in consequence of the comparatively late period at which they flower, and there is always a ready sale for good Apples. Almost all our cultivated varieties of that fruit, including the newest as well as the oldest, are to be found in the market gardens, but certainly some sorts are more appreciated than others. The largest bearers, and such as produce fine handsome fruit, are usually the greatest favourites. The following is a list of sorts grown by Mr. Dancer, of Chiswick, and exhibited by him at a meeting of the Royal Horticultural Society, at South Kensington, where they were universally admired as the most superb samples of fruit from standards ever produced in the neighbourhood of London. Their names were—Fair Maid of Kent, Northern Greening, Small's Admirable, Cox's Pomona, Wellington, Blenheim Orange, Gloria Mundi, Brabant Bellefleur, Minchall Crab, Stirling Castle, Braddick's Nonpareil, Hollandbury, Reinette du Canada, New Hawthornden, Beauty of Wilts, Kentish Fillbasket, Barchard's Seedling, Cox's Orange Pippin, Emperor, King of the Pippins, Scarlet Nonpareil, Ribston Pippin, Mère de Menage, Northern Spy, Cellini, Incomparable, Ingestrie, Old Golden Pippin. To these may be added Lord Suffield, a great favourite and heavy cropper, Salopian, Julian, Norfolk Pippin, Court of Wick, Autumn Pearmain, Oslin, Ord's Apple, Bess Pool, Baxter's Pearmain, Devonshire Quarenden, Early Nonpareil, Kerry Pippin, Syke House Russet, Wormsley Pippin, Carlisle Codlin, Yorkshire Greening, Tower of Glammis, Nonesuch, Nelson Codlin, Rymer, Keswick Codlin, Golden Noble, and many others. Barchard's Seedling is a beautiful medium-sized Apple, richly coloured, and an immense bearer. Although Mr. Dancer has several large trees of it, it is comparatively new to cultivators. He received a first-class certificate for it at South Kensington last year. Unless Apples, like other fruits, are of first-rate quality, they fetch comparatively low prices; hence, it is, that Apples are so largely imported from the Continent, and from the United States of America. The American Newtown Pippins arrive in this country in such good condition, and are of such fine quality, that, in their season, they stand at the head of all fruits in the market. During the scarce season, nice eatable Newtown Pippin Apples realise from 3d. to 6d. a piece. Dealers state that it is cheaper and better for retailers to pay 70s. a bushel for such American Apples, as have been re-picked by the wholesale men at Liverpool and Glasgow, than it would be to pay 40s. for them just as they arrive. The Apples are packed firmly in barrels, no kind of packing being used, and they travel and keep satisfactorily treated in that way.

The Pear.

Pears are chiefly grown on the old-fashioned standard run-wild system, no pruning being given but what is done with the saw; and, in a good season, it is wonderful how heavily the trees are laden with fruit. These standards have been "worked" on the Pear stock, which forms a clean stem, the branches usually springing from near the union of the stock with the scion. There are dwarf Pear trees, too, and many that succeed better on the Quince than on the Pear. Market gardeners generally are not, however, very particular about their stocks, for they get the bulk of their trees at the nurseries, and what they graft themselves is usually done on whatever stock they have at hand, be it seedling, sucker, or layer of Pear or Quince. They practise grafting more on old and worn-out trees than on young stocks, and for this purpose

they head back the trees in winter or early in spring either at pruning or digging time; the scions, after being selected, are "heeled in" until March, when they are put on the trees. Grafting more than one kind of Pear on a tree is said to be a preventive of fruit cracking during the swelling period. This is the experience of Mr. Mills, of Chiswick; and, on paying a visit to his grounds early in September last year, I was much struck with his remarkably fine Pear crop. Not only was it an unusually heavy one, but the size and symmetry of the fruits exceeded anything I had previously witnessed on standards. On directing attention to this fact, Mr. Mills admitted that it was universally acknowledged that the very piece of ground on which these trees were growing was the finest natural Pear-tree soil in the district. It was a somewhat light yet deep, substantial, hazelly loam. In reference to cracking, he informed me that many years ago he found that, although the trees were in a thriving and healthy condition, and annually set good crops of fruit, yet, at gathering time scarcely a half sieveful of good marketable fruit could be obtained from them, the fruits being invariably all cracked. This induced him to try the effect of grafting more than one sort on each tree, and the result proved most satisfactory; for, not only did the grafted portions produce excellent fruit, but the original kinds no longer cracked; on the contrary, they produced fruit of exceedingly fine quality, well-formed and symmetrical. Finding grafting in this way successful in a few cases, he extended the practice throughout his orchards; therefore, where one kind of Pear grew alone on a tree, now there are at least three sorts, each apparently being of material benefit to the other. I noticed a number of trees, formerly Beurré Diel only, that consisted of that sort as a centre-piece surrounded by Beurré Bosc and Louise Bonne, the branches of all three sorts bending under a heavy burden of fine Pears. Bishop's Thumb was the only sort that I saw doing well by itself, and its fruits were so large as to be quite unlike the usual type. Mr. Mills also informed me that the Duck's Egg does well alone, and is a valuable early market Pear. Of William's Bon Chrétien no fewer than 100 bushels were sent to market from one garden alone in one day. In addition to a plurality of kinds, it is found that running a longitudinal cut down the bark of the stems every second year is of material benefit to Pear trees, inasmuch as it prevents the stems becoming hide-bound, and producing sudden swollen protuberances near the union of stock and scion such as are often observed; besides, it maintains a healthier connection between the branches and the roots, than would be the case if the stems were bark-bound. Mr. Pitman, the fruit tree foreman at Osborn's nurseries, also recommends this practice. In the case of fruit tree stocks, particularly those for standards, Mr. Pitman, before grafting, and even a year or two afterwards, permits some little twigs to grow out of the stock or trunk, but he pinches them always well back; this he maintains prevents hide-binding, and helps to strengthen and increase the size of the stems. The necessity of a change of crop, in regard even to fruit trees, was plainly evident in Mr. Mills's grounds. In a portion of them old Pear trees had been grown for years; these were removed and replaced by young ones, but the latter have made but indifferent progress, while, had Apple or Plum trees been substituted for the young Pears, the result would probably have been more satisfactory, as both of these thrive remarkably well in company with Pears. Last September, Mr. Mills, having occasion to leave home for some time, had all his Pears harvested before his departure, marketing such as were ripe and ripening, and storing the rest. The result was, that he had some of the very finest-flavoured fruit ever tasted. Louise Bonne was splendid, and Beurré Diel he never had so fine, giving him a succession of ripening fruit from October till February. He, however, regards Beurré Bosc as the king of market Pears, on account of its prolific bearing-habit and handsomely-formed and large-sized fruits, of fine quality. The distance apart of large standard trees is, as I have stated, very variable, but from 12 feet to 20 feet may be regarded as the average for rows, and from 12 feet to 16 feet asunder in the row. In fact, in some cases, the trees are growing so thickly together, that their branches partly intertwine, whilst, in others, the distance is sufficient to give ample room to the trees, and space and exposure enough to both bushes and vegetables growing

between them. The trees are not all tall standards, however, for some are as dwarf and symmetrical as one could wish to see. Mr. Dancer prefers naturally grown bushes to rigid French pyramids, as the former bear more fruit and resist wind better than pyramids. Some kinds of Pear trees have naturally a pyramidal habit, which, as a matter of course, is encouraged. Mr. Dancer's bush Pears are in rows, about 9 feet apart and 8 feet asunder in the row, and he has some even closer than that. Of wall Pear trees, or, in fact, of fruit trees of any kind grown against walls, there are but few in market gardens, and such as are grown in that way are often much neglected. I have, however, frequently met with trees, chiefly Pears, planted against a north or east wall, and having their branches trained fan-shaped down the other side. This enables south borders to be cropped without interfering with the roots of the trees, and also prevents the trees from starting into growth so soon as they otherwise would do, and hence diminishes the chances of their being injured by spring frosts. In order to indicate the kinds of Pears grown in market gardens, I append the names of the sorts exhibited at South Kensington last autumn from Mr. Dancer's gardens, and which, as regards excellence and size, contrasted favourably with those sent from France and the Channel Islands:—Beurré de Capiaumont, Althorp Crassane, Bishop's Thumb, Seckel, Napoleon, Beurré Léon le Clerc, Conseiller de la Cour, Dr. Nelis, Winter Nelis, Marie Louise Nouvelle, Colmar d'Aremberg, Gratioli, Madame Treyve, Louise Bonne, Marie Louise, Belle Julien, Beurré d'Aremberg, Fondante d'Automne, Beurré Hardy, Durandau, Bergamotte Cadette, Baronne de Mello, Huyshe's Victoria, Urbaniste, Doyenné du Comice (fine), Bergamotte d'Esperen, Bezi Mai, Catillac, Marie Louise d'Uccle, Beurré Clairgeau, Beurré Bachelier, Léon de Clerc (Van Mons), Belle et Bonne, General Todtleben, Calebasse Grosse, and Beurré Bosc. In addition to these there are also grown Glou Morceau, Beurré Rance, Thompson's, Windsor, Doyenné d'Été, Ne Plus Meuris, Knight's Monarch, Soldat Esperen, Broom Park, Comte de Lamy, and many others. A great proportion of the best dessert Pears seen in the English markets are imported from France and the Channel Islands. Indeed, California and many parts of Eastern America are likely to play an important part as regards furnishing Pears to the English markets; but the distance and length of time that elapses from the period when the fruit is packed till it is unpacked in England sometimes tells badly in regard to Pears.

Plums.

These are extensively grown in the form of standards, and but a small proportion is cultivated against walls. The standards are chiefly grafted or budded on the Muscle stock, or Plum tree suckers are preserved and lined in to be used as stocks. It is difficult to give exactly the distance between the trees as they are planted so variously in different gardens. Rows 12 feet apart, and the same distance from tree to tree in the row, or 15 feet by 15 feet, may, however, be considered to be the most general distances. As far as I have been able to observe, the greater the distance between the rows the heavier is the crop of fruit; besides, wide planting is better for vegetables growing underneath the trees than close planting. As Plum-tree roots keep so close to the surface of the soil I consider the market gardener's method of deep digging annually between the trees a commendable practice, as he thereby prevents over luxuriance by repeated root-pruning, which is never so severe as to be injurious; besides, were he to leave the ground for one year undug it would be dangerous to dig it next season on account of the injury that would thereby be done to the trees, and he would also lose his under crops of vegetables which are always useful, in so far as they render the loss of the fruit crop less to be regretted. The digging, however, together with the annual heavy manurings renders the trees very productive, so much so that I have seen the young Plums thinned a little three times before a crop was permitted to ripen, and even that had to be picked gradually, taking the ripest first, or else one half of the fruit left would never have ripened. The trees, too, required supports in the way of forked props put under their branches. The kinds grown consist of those usually cultivated in ordinary gardens, especially Damsons, Belle de Septembre, Coe's Golden Drop, Victoria, Jefferson,

Mirabelle, Gages, Blue Imperatrice, Royal Hâtive, Kirke's, Washington, and others.

Cherries.

The Cherry orchards of the south of England are celebrated for their beauty when in flower, and the richness, quality, and quantity of their fruit when ripe. Cherry trees are principally grown in Grass orchards, particularly in Kent, and are therefore rather beyond the bounds of what may be termed metropolitan market gardens. In these, however, Cherries often find a place; indeed, I never yet saw Kentish Grass orchards bear such fine fruits, or so plentifully, as I have seen some young trees do in Mr. F. Dancer's gardens at Chiswick. These trees are in the form of dense, but open-hearted, bush standards, grafted near the ground on the Mahaleb stock. This stock, however, is only available for dwarfish-growing kinds, such as the Kentish and May Duke. Cherry seedlings make the best stocks for strong growers, like the Bigarreau. Dwarf trees are usually kept trim by means of the pruning knife, although few trees dislike cutting so much as the Cherry. Tall standards are allowed to grow at random; indeed, they make so little young wood that pruning, beyond removing dead wood, is seldom necessary. The kinds chiefly grown are the Kentish, Black Heart, Knight's Early Black, May Duke, Late Duke, Elton, and Morello.

Raspberries.

Raspberries are a profitable and accommodating crop. Raspberry culture in market gardens may seem to some to be carried on with comparative carelessness, compared with the staking and arching methods practised in private gardens. The Red Antwerp is almost the only variety grown. The stools are planted in rows 3, 4, or 5 feet apart, and from 20 inches to 2½ feet asunder in the row, but 3 by 2 feet may be regarded as the usual distances. At pruning time—say November—the canes are thinned out to six or thereabouts, if there are so many, and these are cut over about 2½ or 3 feet from the ground. In early spring these are loosely tied together with a piece of rope yarn, no stakes being used. The Raspberry plantation may either be in an open quarter, or rows of Raspberries may be planted between fruit trees, and intercropped with ordinary quick growing vegetables. The plants get no further care, beyond the replacing of a loose tie, till gathering time; nevertheless, thus treated, I have seen them bear immense crops; I must confess, however, that I have seen larger and finer berries grown in private gardens than I ever did in a market garden. F.

SMALL VERSUS LARGE POTS FOR PINES.

ONE of the prevailing evils of the age, as regards Pine-growing, is large pots. 12, 14, and 16-inch pots are the sizes generally used to produce fruit 3, 4, and 5 pounds in weight. An impression seems to prevail that plants grow in proportion to the sizes of their pots, and that the largest plants will bear the best fruit, which is not by any means the case. My experience of large pots is, that they require much more room than smaller-sized ones. The space required for two plants in 14 or 16-inch pots would accommodate three in 10-inch ones; plants in 14 and 16-inch pots to have sufficient space require at least 3 feet between each plant in the row, and supposing a Pine-bed to be 100 feet long and 3 feet wide (which are the dimensions of some here), at this rate there would only be thirty-three plants in the row, or sixty-six in the bed. Plants in 10-inch pots have ample room, plunged 2 feet apart, which allows of fifty plants in the row and one hundred in the bed. This gives thirty-four more plants when in the small pots than in the large ones, in the same space, which means thirty-four more fruit. As to weight, allow the average to be 4 pounds; out of the sixty-six in large pots there are 264 pounds of fruit, while those in the small pots yield 136 pounds more, or 400 pounds of fruit altogether—besides other advantages, the positive gain in this way, is absolutely unquestionable. These calculations are not vague speculations; I have seen them verified repeatedly. There are, however, other unprofitable disadvantages connected with large pots. I consider plants in the larger-sized pots generally take six, and often twelve, months longer to come into fruit than those in the small ones. The reason of this difference is easily explained. It is next to, if not quite, impossible to get a Pine into fruit if the pot is not entirely filled with roots. Few, if any, of even the strongest-growing Pines will fill a 16-inch pot sufficiently full of roots in one season to ensure fruit; and, if fruit is not got from

the first growth, farewell to any definite period when it can again be had. Plants in small pots make plenty of roots in four months; while those in the larger ones, at the end of that time, are few and far between. I am convinced that a well-packed potful of healthy roots does ensure and produce fruit in a far more perfect manner than any quantity of leaves. As to the case of the plants in the large pots, taking so much longer to come into fruit than the small ones, three crops may be secured from the latter while only two can be depended on in the same time from the former. Generally, there is no variety of Pine so uncertain of fruiting as the Queen, and there is none that will fruit surer or more satisfactorily in a small pot than that variety. I believe that the whole of its freaks in fruiting are due to the large pot in which it rambles about. I have frequently observed that the plants most liable to show any tendency to ill health were those in the largest pots. A 16-inch potful of soil, with not many roots therein to utilise the moisture, takes a long time to become dry when thoroughly soaked with water, a circumstance which is not always taken into proper consideration. Pines, like other small plants put into large pots, are lost for a considerable time, sometimes altogether. Even youthful vigour takes a long while to overcome and thwart the many impediments which it has to encounter in this way, I have seen young Pines potted out of 6-inch sucker pots into 14-inch ones, others shifted from 6-inch ones into 10-inch ones, and from these into 16-inch pots, thereby giving much unnecessary trouble and labour.

J. MUIR.

THE SUSSEX FIG ORCHARDS.

AUTUMN visitors to Worthing and its vicinity may have noticed the abundance of green Figs which are offered for sale there during the season, but it is not generally known that this fruit is cultivated not only to an extent but also in a manner that is peculiar to that part of Sussex. In other parts of England we find single Fig trees trained along the wall, but here there are whole orchards full of these trees grown as standards, some of large size and patriarchal age, and so thickly covered with broad indented leaves that they irresistibly bring to mind the scriptural figure, whereby a period of peace and prosperity is indicated by a man "sitting under his own Fig tree." Notwithstanding the neighbourhood of the bare chalky downs, there is immediately above Worthing a belt of very fertile country, with a light clayey soil. Probably there is not in all England a more garden-like district than this; the lanes and hedgerows are bright with wild Honeysuckle and Clematis, and wood Anemones and wild Strawberries rustle in copes. Gardens in general abound in this district, but the special object of culture is the Fig. In one orchard at Tarring there are no less than 120 large standard Fig trees, which sometimes in a good season produce upwards of 2,000 dozen of Figs. A goodly sight it is to see the luscious blue-black fruit hanging from the trees, beneath whose overarched and interlacing boughs one walks as in a bower. The crops vary a good deal, both in quantity and quality, according to the season. This year it is a good crop. The heat and dryness of the "comet season" have been propitious to the Figs; and in another week or so the inhabitants of this region will be busily occupied in gathering the fruit, and packing a large portion of it for transit to Covent Garden and Brighton Markets. The trees at Tarring are very old, having been planted more than 100 years, but the old stocks in a garden occupying the same site, from which these were taken, are gifted by tradition with a greater age and more illustrious origin. They are said to have been placed there by no less a person than Thomas-a-Becket. That famous ecclesiastic—as the story goes—on his return from Italy brought with him the Fig which he was the first to plant on British soil. Whether the tradition be true or not, it seems certain at least that the martyr Archbishop did sometimes reside at Tarring. The ruins of a house which is said to have been his palace are still shown, and the Vicarage of Tarring remains to this day in the patronage of the see at Canterbury. The neighbouring village of Sompington claims a still higher antiquity for its Figs. Going back to the time when the kingdom of England was an appanage of a Norman dukedom, it relates how the Abbot of Fécamp, on the opposite coast of Normandy, who was accustomed to honour this island with an occasional residence in it, purchased a manor at Sompington and introduced the Fig. As a credential of the truth of this story it points to the name which the place still bears Sompington-Abbotts. But there is another and more modern visitor from foreign parts who makes an autumn trip, each year, to the Sussex Fig orchards, and the report of whose annual advent rests not on uncertain tradition, but on the concurrent and indignant testimony of the Fig growers. This is none other than the Italian Beccafico or "Fig-eater"—not one of the native species to which the title of "Fig-bird" is sometimes given, but the genuine "Fig-eater" of the Roman Campagna. Unknown to any other part

of England, this knowing little "gourmet" has discovered that his favourite fruit has been transplanted here, and shows his appreciation of the success with which it is cultivated by travelling northwards every year at the beginning of September, and paying an uninvited and unwelcome visit to the Sussex Fig orchards. At the close of the Fig season, and before the first frost has given notice of the approach of winter, he spreads his wings and returns to the shores of the Mediterranean. [So writes a correspondent of the *Morning Post*, concerning the Sussex Fig orchards, which are most interesting to the English fruit-grower, as showing that the Fig can be grown with perfect success as an orchard tree in England. We have recently visited some of the most extensive of the Sussex orchards, and found that whatever merits they have, is in no way owing to cultivation or pruning. We believe that with the introduction of early and superior kinds of Figs and improved culture, we could have Fig orchards in England as good as any in existence. Apart from the fruit, which is destined, like the Tomato, to become much more popular in England than it is, the Fig is an exceedingly beautiful tree when grown as a standard. We have seen some in the south of France this year, 60 feet in spread of branches, and though trees in England would probably never attain that size, they would grow large enough to prove very ornamental objects.—Ed.]

A Simple Method of Cleaning Melon Seed.—Some little ingenuity is required to free the seeds of Cucumbers and Melons from the slimy mucilage in which they are imbedded in the ripe fruit. Gardeners generally save these seeds from some particularly prolific or richly-flavoured variety in which they have full confidence, and each adopts a system of his own in cleaning the seed. I have tried washing in water, rubbing in dry sand, and several other methods, but, as regards simplicity, the following is best:—Place the seeds and pulp, just as extracted from the fruit, in a piece of fine netting or tiffany and squeeze the whole so as to get rid of superfluous moisture, and then empty the mass of pulp and seeds into a coarse towel and rub them dry. This can be done in five minutes and every seed will be as clean and as bright "as a new pin," and their is no danger of mildew or Fungus attacking seeds thus cleansed if they are stored in a dry place.—F. W. B.

The Best Currants.—The old Red Dutch and White Dutch are good, reliable sorts, and we would not advise anyone who has them growing in his garden to throw them out. Larger Currants, however, may be picked more readily; they make a finer show on the table, and they last longer on the bushes without shrivelling. The two sorts that we place above all others, therefore, are the White Grape and Versailles or Cherry. Mixed together, they make a beautiful table dish. The only drawback on the White Grape, is the slow and straggling growth of the bush; but this objection is obviated by giving them clean and mellow culture, applying manure occasionally, and keeping them sufficiently pruned. It will not do to neglect them, and to allow them to become enveloped in Grass and weeds, the usual fate of Currant bushes with careless managers. The Cherry, on the other hand, is a strong grower, and does not absolutely need such generous treatment, but it is better to cultivate it well, and prune the bushes as they require it. Our own bushes of the Cherry, which have stood in the garden fifteen years, are three times as large as those of the White Grape planted at the same time, and they always bear profusely. When allowed to hang long, and become fully mature, they lose their objectionable acidity, and are a rich and agreeable berry. The Versailles is so nearly like the Cherry, that if the planter has one, he need not take the trouble to procure the other—although the bunches of the Versailles have the advantage of being rather the longer. The Victoria and Prince Albert are good very late varieties—the former red, the latter pale red—a few of which may be planted for a succession. All that is absolutely needed in the pruning which we have alluded to, is to cut out the old and enfeebled wood, to give the younger shoots, evenly distributed through the bush, a better chance to grow. This will make large bunches and berries.—*Cultivator*.

Trebbiano as a Late Grape.—I often wonder this fine old variety is not more generally grown, as its quality is really excellent when thoroughly finished off with a little fire heat and plenty of sun and air. Here it makes a nice addition to the winter's dessert, and forms a good companion to Barbarossa, the latter being another fine late Grape which requires similar treatment.—B. J., *Farnham*.

Fruit in Yorkshire.—Apricots have been so plentiful that at Thirsk, Northallerton, and Richmond, they could be bought at from 6d. to 8d. per score. Some of the wholesale buyers offered only 2s. 6d. per stone for them. Victoria Plums realised a good price, viz., 6d. per pound; Orleans Plums fetched 4d. per pound. The difference between weight and measure is that 3 pounds of Plums would be equal to 2 quarts. Apples are selling at from 2d. to 4d. per pound; Jargonelle Pears from 3d. to 6d. per pound, according to size and quality; common Pears are 2d. per pound.—T.

THE FLOWER GARDEN.

POT CULTURE OF THE IVY HAREBELL.

(*CAMPANULA HEDERACEA*.)

THE best way to get this graceful British plant into cultivation is to secure a plant from its native habitat; but, failing this, it may be readily obtained from seed, which is to be found on plants of it in September. It must be particularly noted, as regards its cultivation, that it is a trailing herb, with shoots 18 inches or more in length, and that the prettiest way is to let it hang over a pot all round, a 7-inch or 32-sized one suiting it best. It grows well during the early part of the summer, if kept in a nice moist condition, never dry, as it is in reality a bog plant. Do not, however, try to grow it in a pot plunged in water, for, under such treatment, it will soon die; and it is singular that it should do so, seeing that it only roots half an inch deep or so at the most. After blooming it gradually dies back, when seed may easily be saved from the old stems. During winter it will be dwarf and sickly looking; but this may be disregarded, and, as soon as it shows signs of moving in December or January (if kept in a greenhouse), it should be re-planted in the pot, filling up with nice open soil, and plenty of drainage to within about an inch of the rim; then get a piece of the old plant, which will be found like a net, half an inch thick of fibre and underground runners, and after opening it out a little, lay it on the mould in the middle of the pot, and cover it over with small bits of turfy mould to the thickness of half an inch; water it and keep it moist, and it will very soon run all over the pot, coming up at the edges, and finally hanging down all round, and blooming beautifully. Though a hardy plant, few gardens can supply the conditions of a turfy moist corner for it, and it is as well to know that it does first-rate in a greenhouse. It is a thoroughly good plant for indoor culture for either amateur or connoisseur.

A. DAWSON.

THE PLANTING OF GARDEN VASES.

VASES for flowers are made of various shapes, and the shape should determine the way in which the vase should be filled. There is the flat shallow vase with broad brim, inviting you to hang a fringe over the edge, and a little garden of plants gently swelling over its surface; then there is the tall deep vase, which should be planted fountain-like, plants tall and spreading. Then there are vases intermediate between a cup and a bottle, tall, large in the centre, and contracted at the neck, with perpendicular-looking handles or ears; these should be planted with something tall in the middle, and with dwarf trailing plants frothing over the shoulders; again, there are vases of all intermediate shapes, some flattish, with swelled bodies and rather contracted necks, some neither the one nor the other, but capacious, with exaggerated freedom of handle; some in the form of Tulips and Water-Lilies, some ornamented with goats' heads and

griffins, some encircled with human heads, with ample flowing beards that ultimately get obscured when the tresses of Minnie Warren or the sprays of *L'Elegante* fall over them. As a rule, flat vases should be planted with dwarf plants, giving the vase at a distance a flat rounded outline. Tall vases should be planted with tall things in the centre, modifying the manner of planting with the intermediate shapes. A tall cup-like vase would look poor with a short flat bouquet of flowers growing on the top of it; but with tall fountain-like plants in the middle, with the rim gracefully covered with some trailing plant, it will prove a pleasure to look upon. A flat shallow vase planted with tall plants would look even worse, or propped up to a pyramid like the top of a Wheat-stack, as is often done. We have tried various modes of planting vases; we have had immense bouquets of one sort of plant, which were showy enough from a distance, but vulgar; planted in rings of colour, ribbon fashion, is perhaps worse; in almost every instance, except when the vase is very small, and a single plant sufficient, it is much the best to use a mixture of plants.

Materials for Filling Vases.

Ours, like our flower-beds, are filled twice a year—in summer, at the bedding-out time, with summer-flowering plants; and again, in the autumn, with hardy plants. The summer plants are all of the same character as the bedding plants, of which *Geraniums* form the

staple for the vases; but we find that, as a rule, the cuttings of the autumn are not of much use; large plants in small pots are the best, the top fills out when for the time the root occupies but a small space. Lifted plants from the beds in the autumn, of whatever sort, can always be put into small pots and kept so throughout the winter; this applies to *Mesembryanthemums*, *Ivy-leaf Geraniums*, *Abutilons*, *Gazanias*, *Cineraria maritima*, *Centaurea gymnocarpa*, *Tropæolum Minnie Warren*, and others, as well as to the general run of *Geraniums*. A special eye must be had to plants for vases where



The Ivy Harebell (*Campanula hederacea*).

there are many to fill, else there will be disappointment when the time of filling comes. Much can be got ready in spring, and grown into the desired size, such as common *Tropæolums*, *Lobelias*, *Petunias* from seed, *Calceolarias*, *Verbenas*, and cut-back *Fuchsias*. There is quite a wealth of plants suitable for vases when prepared for the purpose; but the chief point is the tasteful planting of the vase: these, like flower-pots, should be provided with a hole in the bottom to carry off superfluous water, although it is seldom they get over-watered. A small pot may be put over the hole, mouth downwards, or a few large crocks, just to prevent the hole from becoming stopped up. Many crocks are objectionable, except when the vase is very deep and bottle-shaped.

Soil for Vases and Planting.

The soil used should be a mixture of fresh fibrous loam and rotten dung, the richest which can be had, the soil to be put into the vase as the work of planting proceeds. It is convenient for the work and for comparison to collect all the moveable vases to one place where the heap of soil is, and the plants at hand for selection as wanted; the work of filling then goes on more expeditiously. In planting, begin at the rim with the plants which are to hang over the edge. *Pelargonium Willsii* roseum, *Ivy-leaf L'Elegante*, *Duke of Edinburgh*, *Minnie Warren Tropæolum*, and *Lobelia*, make a fine mixture for a marginal row to hang down; the old pink *Ivy-leaf Geranium*, *Mangle's*

Variegated, spreading plants of *Gazania* and *Abutilon vexillarium marmoratum*, with *Cineraria maritima* and *Lobelia*, also make rim plants; the next series inwards may consist of *Coleus*, *Centaureas*, *Calceolarias*, *Fuchsias*, and various *Geraniums*, choosing the plants as to size until the vase is finished; but we do not care for finishing a vase with one conspicuous staring plant in the centre, as is sometimes done. It is often necessary in planting vases with a bulging shoulder to run two or more thin wires round on which to tie the hanging plants in order to prevent them from being chafed to pieces by the wind; they also look much better regulated and tied down; some done in that way here are much the most effective, for, although tied, they still appear to hang. For the centres of tall vases *Acacia lophantha* is very useful with a piece of bare stem, to which can be tied the long sprays of *Abutilon vexillarium marmoratum*; the variegated Japanese Maize also suits well for this purpose; pyramidal-shaped *Fuchsias*, the narrow-leaved *Dracenas*, *Humea elegans*; also for such vases I use plants of the semi-trailing *Geranium Orange Nosegay*, *Centaurea gymnocarpa*, *Salvia patens*, with a few plants of *Petunia* to fill up the bottom and hang gracefully over. Few plants are better adapted for vases than *Petunias*, which flower more profusely when pinched for root-room; but water must be supplied to them liberally—indeed, the question of water must always be particularly attended to, and with a liberal hand. Sometimes it will be necessary to soak the vases thoroughly twice a day; for, if once allowed to get too dry, their beauty is marred for the season. After midsummer weak liquid manure should be given every time they are watered; for, if allowed to get seedy and starved, instead of an ornament, they become a decided eyesore.

Winter Vases.

Vases for winter may be filled in various ways: first of all, dwarf shrubs may be used entirely; one shapely *Rhododendron* will fill a vase at once, or a mixture of small things may be used. The pretty *Erica herbacea* makes a nice winter edging, and the various *Vincas* and *Ivies* are suitable for hanging over; we used *Aucubas* and *Retinosporas* largely last winter. *Retinospora pisifera aurea*, *Euonymus radicans variegata*, *Erica herbacea*, *Iberis sempervirens*, and *I. tenoreana*, are stocky little plants, which associate well together in filling vases. *Festuca glauca* in thick tufts also harmonises well with these, but it loses its blue colour in winter. None of these seem to suffer much when the soil is allowed to be dry; they were never watered; and if the soil is raised in the middle and made hard on the surface, much of the rain runs off. The chief feature last winter, however, in the way of vase-filling was in the use of hardy succulents for low flat vases, such as *Sedum glaucum* and *lucidum*, *Sempervivum californicum*, *montanum*, and the common House Leek; *Saxifrages*; also variegated *Thyme*, *Pyrethrum Golden Feather*, &c. A very pretty and tasteful effect may be made with such things in large vases if they happen to be under the eye, the soil raised and rounded over, and each vase planted with a different design like a miniature flower-bed. The *Golden Feather* and *Golden Thyme* associate well with the succulents, and the drier the soil the more successful will be the result—*Golden Feather* being the least satisfactory. In planting vases at all times we never make any allowance for growth, but plant thickly and make them look full at once; the plants then support each other, they have plenty of room to extend themselves outwards, and the effect improves as they get interlaced. If possible, it is always better to group the vases in some shady sheltered place for a few weeks after filling in summer, before being placed in exposed positions on terraces in the blaze of the sun; this is, however, not so necessary in the case of large vases with a large body of soil in them as with smaller ones.—*The Gardener*.

***Saxifraga florulenta*.**—I have made several attempts to grow this interesting species, which, I believe, has hitherto almost baffled the attempts of English cultivators. In 1872, I collected a considerable number of plants from an Alpine ravine above St. Martin Lantosca, nearly the whole of which, including those I distributed to other gardens, were lost, and, I believe the plant is not capable of pot-culture. With a further supply obtained last autumn, I have been more successful, and have now about a dozen plants in luxuriant growth. In its native habitats, the rosettes almost invariably grow in a vertical or partly inverted position, generally under projecting ledges of rock with a northern aspect, and, I believe, that success in its cultivation can only be attained by imitating as closely as possible those natural conditions. M. Boissier, I understand, grows it in the interstices of a brick wall, and following his example, I find that the plant is quite amenable to cultivation. Of seven plants I wedged tightly under the coping stone of a brick tank, six have become nicely established, and are increasing rapidly in size. This position seems just to supply the native conditions of the

plants, viz., moderate moisture, and firm root-hold, thorough drainage, vertical shelter, and northern exposure. I have also several plants in good health, wedged tightly into the crevices of the northern side of a steep bit of rock-work. The figure in the *Botanical Magazine* for June, from a specimen I found in flower last September, near the summit of the Col du Finestrelle, in the Maritime Alps, faithfully represents this beautiful species, which is a Dodo amongst *Saxifrages*. It has no near ally, and is only known to exist within a limited district of a few square miles, in the highest parts of the range of the Maritime Alps, west of the Col du Tenda. Judging from the association of species in the central mountains of Corsica, I think it not at all improbable, that it may also be discovered in the Monte Rotundo district, near Corte.—GEORGE MAW, *Benthall Hall, Berkeley*.

Hardy August and September Blooming Plants.—I find that my garden is pretty gay with flowers of hardy herbaceous plants during the spring and early summer months; but, in August and September, I have but few plants in bloom, and should therefore be obliged by your giving me the names of some of the best hardy plants that flower in these months.—SIMON. [Among the finest of autumn-blooming plants are the red-flowered *Anemone japonica*, and its beautiful white variety known as *Honorine Jobert*; the genus *Aster*, also, affords some highly attractive autumnal blooming plants, among which *turbinellus*, *pyrenæus*, *Drummondii*, *Shortii*, *Novi-Belgii*, *Novæ Angliæ*, *lævis*, and its varieties, are the best. In many places the *Arundo conspicua* and *Pampas Grass* are also highly attractive in September, particularly the latter. The *Snappedragon*, too (*Antirrhinum majus*), will be found worthy of attention, as will also many sorts of *Fuchsias*, especially *F. gracilis*, which, for general purposes of decoration, is, we think, the best, being both very hardy and floriferous; *Coreopsis lanceolata* is usually a mass of bloom late in summer, as are also such plants as *Phygelis capensis*, *Pyrethrum serotinum*, a tall late flowering species, *Eupatorium purpureum*, *Helenium autumnale*, *Helianthus multiflorus fl. pl.*, a free-flowering kind, the blooms of which are as large and as conspicuous, in most cases, as those of a yellow *Dahlia*, for which it forms a capital substitute. Several of the *Stonecrops* (*Sedums*) bloom freely in August and September, and rank amongst the most attractive of hardy herbaceous or Alpine plants. We especially allude to the now well-known *Sedum spectabile*, which produces masses of rose-coloured flowers in abundance, as do also two distinct dwarf species known as *Sieboldii* and *Ewersii*. To the above might be added such perennials as *Corydalis lutea*, *Gaura Lindheimeri*, *Stokesia cyanea*, *Polygonum cuspidatum* and *vacciniifolium*, *Statice latifolia*, and many autumn-flowering bulbs, among which may be mentioned *Crocus speciosus*, many varieties of *Colchicums*, *Sternbergia lutea*, *Merendera Bulbocodium*, and others. Some hardy annuals bloom freely during the later months of the year, particularly if they are sown about the end of June or middle of July, and such plants as the *Saponaria* and *Marigolds* keep flowering until cut off by autumnal frosts.—T. S.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Sparaxis pulcherrima Thunbergii*.**—This beautiful, and by no means common, *Sparaxis* is now flowering well with me in the open border, sending up fine spikes of its lovely and most gracefully pendent rose-coloured blossoms resembling the finger of a glove in shape.—W. E. G.

***Suaeda dendroideis*.**—This is one of the finest ornamental annuals I have ever seen. Looked at a short distance off, it somewhat resembles a young Larch. It is of a fine branching pyramidal habit, attaining a height of between 2 and 3 feet. The leaves are of a glaucous green colour. It forms a beautiful sub-tropical plant.—R. H. B.

***Fuchsias* in the Isle of Man.**—Here these are truly wonderful: they grow up the house fronts, and grow out into trees—so large that you can have a party around the bole of the trees. They are also grown for hedges and kept nicely clipped, and with their bright green leaves and scarlet flowers look extremely refreshing; the winds and the spray from the sea do not in the least affect them.—W. NIEMEN.

Hutton's Cockscorn (*Celosia Huttonii*).—What means should I use to make this flower? I have sown good strong plants about a foot high, but they show no indication of flowering. Is it now too late to expect them to do so? The plants were raised in heat, and have been grown on in a very warm greenhouse, and some seedling *Celarias* raised at the same time, and under similar circumstances, are unexpectedly showing flower.—A. B. Messrs. Veitch inform us that *Celosia Huttonii* does not flower till late in the season, generally in the latter end of September, after the plants get a little beyond a foot in height. No particular treatment is required to make them flower.]

***Erpetion reniforme*.**—This little Australian gem is flowering remarkably well with me this season. As it is not perfectly hardy here, it requires the protection of a cool frame in winter, and to be planted out in May. It luxuriates in peaty loam, and forms compact tufts of reniform leaves adorned with a profusion of blue and white Violet-like flowers. I am sure that all who appreciate modest beauty will thank me for directing attention to this little plant. When grown in pots under glass, it is not nearly so beautiful as when planted in the open border. Well do I recollect the pleasure with which I collected specimens of it, some thirty-five years ago, when wandering among the valleys of the Australian ranges.—J. WHITTAKER, *Melby*.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Vases for the Breakfast-Table.

On the breakfast, as well as on the dinner, table there should always be at least one vaseful of flowers, and as the breakfast-table is seen by daylight, the decorator has a much larger amount of blooms to select from than is the case when they are to be subjected to artificial light. In summer such decorations should consist nearly altogether of hardy Fern fronds (or, at least, those which will remain fresh for some time after they have been cut) and wild Grasses, with only just a few flowers dotted through them, here and there, to give colour; as the flowers fade much sooner than foliage, they can be removed when necessary, and fresh ones put in their places. Thus a variety of shades of green may be blended together, in such a way as to show up well, in contrast with the white damask cloth. I have seen very charming arrangements made, wholly without flowers, Ferns and other foliage being used alone; but to make these effective is by no means an easy task, and should never be attempted by a beginner, as failure is sure to be the result. A little practice, however, and a good eye for colour, will soon overcome the difficulty. The following is one of the prettiest little ornaments for the breakfast-table I ever put together. The vase which I employed consisted of a soup-plate, and in the centre was a plant of *Cyperus alternifolius*; round the edge of the plate I put a fringe of different varieties of Ferns, some golden ones, so placed as to exhibit the colour on the backs of the fronds; over the surface of the Moss I then arranged sprays of rich purple Cinerarias, white Azaleas, Lily of the Valley, and white Cyclamens with purple tips, a few fronds of Maiden-hair Fern being interspersed through the whole, and up the slender stems of the *Cyperus alternifolius* ran a few slight shoots of



Vase decorated chiefly with Grasses.

Cissus discolor. Another pretty little vase, but of much smaller dimensions, I have often used during the summer months. It was a simple trumpet of white China resting amongst a cluster of silver rustic branches; in the trumpet I put white Sweet Peas, blue Corn-flowers, a few Fern fronds, and wild Grasses. This style of vase takes but very few flowers (an important point where there are not many plants to cut from); and, for a small-sized circular table, an

arrangement of this kind will be found large enough. The next I shall describe is quite different from any to which I have yet alluded, and is well adapted as to form for either the breakfast or dinner-table, and it would also be found, I have no doubt, to be a very elegant ornament on a side table in the drawing-room, but as the decoration of the breakfast-table is the subject now under consideration, I shall confine my directions to dressing it for that purpose. In each of the tiny tubes grouped round the glass ball in the



Vase ornamented chiefly with Ferns.

accompanying illustration a Moss Rose-bud might be placed, backed up by a few fronds of Fern, while the tazza may be filled with various other kinds of flowers, and the trumpet finished off with a plume of Grasses or Ferns. Any style of floral decoration, indeed, is acceptable on the breakfast-table; for, as a rule, not one in a dozen has a vase of flowers on it, while, on the contrary, one often meets with decorations on dinner-tables that might very well be dispensed with. Whenever possible, however, always have a cheerful vaseful of flowers on the breakfast-table.

A. HASSARD.

Maize as a Window or Balcony Plant.—Maize or Indian Corn has much to recommend it to the notice of window gardeners, being easily grown and readily propagated. Its appearance is quite distinct from that of anything else in the way of window plants, and it will make a luxuriant growth even in the most smoky and densely-populated parts of London. If sown on a genial hotbed in February, and potted on in rich well-manured compost, young plants of it will be strong and vigorous, and ready to place on the balcony or outside the window, in May. As a central plant for a hanging-basket or rustic stand, Maize is equal to a *Dracæna* in grace and beauty of outline, besides being much more hardy. It grows from 2 to 3 feet high, and its fresh green wavy leaves hang gracefully over the sides of the pots in which it is grown, and do much towards adding variety of outline to the most formal arrangement. There is a variegated variety, the foliage of which is profusely striped with creamy white. This is an effective addition to the centres of vases in which bedding Geraniums, Nasturtiums, and Lobelias are planted during the summer months.—F. W. B.

THE GARDENS OF ENGLAND.

MARTON HALL.

THIS, the residence of H. W. T. Bolkow, Esq., M.P., occupies one of the finest sites in Cleveland. It is of modern erection, in the Italian style, rich in architectural ornament, and is surmounted by a lofty dome, which has become a landmark for ships entering the Hartlepoons and the Tees. The view from the roof, which is flat, can hardly be surpassed as regards extent; right in the foreground the town of Middlesborough, so closely identified with the Cleveland iron trade, sends skywards dense columns of flame that illuminate the midnight sky for miles around. Eastward, at a distance of five miles, is the broad estuary of the Tees, dotted with ships; in the background the ancient town of Hartlepool stands out in bold relief. To the south is the German Ocean; westward stretches Teesdale, rich in natural beauty, with the town of Stockton, standing high upon the left bank of the river, while the Cleveland Hills, so rich in iron ore and other minerals, in all their varied beauty of form and outline, make a fine background to the picture. Here, too, Captain Cook was born; but the cottage in which the event took place has long since been demolished, and a hall, built upon its site, was burned down some forty years ago. This old hall was never rebuilt, and a portion of its ruins, standing within a few yards of the south front of the present mansion, is clothed with Ivy, and shut out from view by means of evergreens and other trees. In making some recent improvements in the ornamental portion of the grounds, several old fruit trees that stood in little gardens adjoining have been wisely spared, and now form interesting objects amidst rare Conifers, purple Beeches, and weeping trees of various kinds. In autumn these trees yield good crops of fruit, besides forming ornaments to the lawn when in blossom in spring. Let us hope that the day is not far distant when the Apple and other fruit trees will find places amongst the ornamental trees that surround even our best English mansions. I was pleased, too, to see that no systematic attempt had been made to destroy the undulations of surface that naturally existed around this fine mansion, by what are termed modern artificial improvements. No flower beds are in close proximity to the residence; on the contrary, the beautiful green sward is clothed over in a very natural manner with endless variety in the shape of graceful trees and shrubs. Amongst other things I observed many fine standard Rhododendrons of the newest varieties. Mr. Hanson, the gardener, informed me that in such dry years as this, water has to be applied freely to these Rhododendrons during the growing season, otherwise their flowers would be small and imperfect. The soil here is naturally dry and light, and well adapted for the growth of Conifers, among which I noticed different varieties of the Lawson Cypress, very fine, particularly that called *C. Lawsoniana erecta*. Different kinds of Japanese Conifers, introduced by Fortune and Veitch, are here in abundance. Nothing can exceed many of them in beauty of habit and richness of colour; indeed, they only require to be seen to be appreciated. The *Retinosporas* are truly charming, varying as they do in colour from the richest green to the most exquisite golden tints. *Juniperus japonica aureo-variegata*, a species of Golden Juniper, bids fair to become an object of great beauty here, as do also many others, such as *Thujopsis dolabrata*, and, considering the time such things have been planted, the progress that has been made by them is wonderful. The same may likewise be said of the *Coniferae*, planted along the base of the Cleveland hills at the different gentlemen's places, made there within the last twelve years, a circumstance which would seem to support the idea that a soil strongly impregnated with iron is favourable to the growth of Conifers.

The flower garden, which is small, occupies a hollow in the lawn, about 50 yards from the west end of the hall, and a broad terrace from the south front leads to it, past a small conservatory that is attached to the house. A broad avenue leads from the east end to the forcing-houses, which form three sides of a square; running north and south, is an orchard-house, 70 yards long and 18 feet wide, in which the trees are ranged in parallel lines on each

side of a pathway, and its sameness of aspect is relieved by means of the introduction here and there of both foliage and flowering plants. Both in construction and finish this must be acknowledged to be a very superior orchard-house, and, being span-roofed, light is abundant, and the benefit which it confers on the fruit trees is indicated by their deep green foliage, dwarfness, and compactness of growth, as well as by the fine crops which they produce. Mr. Hanson finds Meredith's Vine manure to be excellent for Peaches, Pears, and Plums, and he uses no other stimulant for his trees in pots. Another range of glass, equal in length to the orchard-house, is divided into three compartments, the centre one being devoted to the growth of hard-wooded plants; amongst these were some fine Heaths, Epacris, and Azaleas. Winter Cucumbers are grown in another division, as are also French Beans and other early vegetables. The third division is occupied with fruiting Pines, principally Queens, Black Jamaicas, and Charlotte Rothschild. In the centre of another range are Palms and other plants, among which I observed some fine examples of *Allamanda grandiflora* grafted on the roots of *A. Schottii*. The other divisions in this range are filled with Grapes, Peaches, and Pines. Seldom have I seen a finer crop of Peaches than I found here; one house had just been cleared of fruit, and the foliage looked green and healthy without symptoms of mildew or red spider. Nectarines have also been exceedingly fine, considering the season. The kitchen garden is small and compact, and is enclosed on three sides by the ranges of glass structures; on the walls are some very fine Nectarines and Apricots; standard fruit trees are here kept very dwarf and bear most abundantly, especially Pears, Apples, and Plums; Gooseberries, Currants, and other small fruits seemed to be also plentiful. There is a frame-ground furnished with several forcing pits, in which are grown Melons and Cucumbers in great abundance; in short, nothing has been spared to make the gardens here perfect in every department.

J. THOMSON.

A Good Plea for Public Gardens, &c.—It is all very well (says a "Working Man," in the *Wolverhampton Chronicle*) for the upper classes to talk about abolishing the fairs and the races; it would make no difference to them, as we are quite aware that the gentry think it beneath them to go to such places. They can go to London and the sea-side to amuse themselves; but they should consider that if our amusements are not much to speak of in their estimation, they are the best that are provided for us, and we have to put up with what we can get till we can get something better. For my own part, and many more are of the same mind, I would sooner the races were done away with, if there was a public park for us instead. I should often take my good woman and the young ones there in an evening, instead of going to the "Fox and Goose" or the "Pig and Whistle," where, of course, I should get into company, and out of my money. I should feel as much pleasure sitting by her side drawing a quiet pipe and watching the children romp on the Grass, as my employer does with his cigar in his pleasure grounds looking on while his children are at their games. Many think ill of us because we spend our evenings in public houses; they don't think that working men's houses are very small and inconvenient, and that where there's a family there's plenty for a woman to do, and a man is apt to feel he is in the way; it isn't much pleasure to a man to walk on the road-side over the same ground year after year; and, as for the children—it is true they have the road or street to run about in, provided they keep a sharp look out for horses and cabs, but if they go into a grassy field, where there is plenty of room and no danger, they are pretty sharply ordered out, and it is well for them if it ends there. A people's park would do a good deal for the enjoyment of working men and their families, and now is the time for those gentlemen who tell us that they have the elevation of the working classes at heart, to show it.

The Necessity for Public Playgrounds.—At an inquest held by Dr. Hardwicke on the body of a child who had been run over by a railway van, the learned coroner remarked that, owing to the inaction of the municipal authorities, the metropolis was almost without accommodation for persons to sit or rest, and the same remarks applied to open spaces for children's playgrounds. He advocated the throwing open of the gardens in the squares for certain hours in the day. All children ought to have at least two or three hours, or more, exercise in the fresh air daily. The general public and authorities appeared indifferent to this most important matter, but it was one affecting the future of the country.

HIGH WALLS OF ROCK IN GARDENS.

ACCOMPANYING the rock-works whose peccilities have been so often commented on in this journal, there is frequently an attempt at making a cascade, which is often a complete failure so far as regards the picturesque effect. Forming anything of this nature in connection with artificial rock-work requires much taste and judgment, and the attempt had better never be made than made without such conditions. In public and private gardens, however, there are not unfrequently to be found high masses of natural rock, over which cascades may be conducted with almost the certainty of producing a good

Arabis and Aubrietia. On such walls of rock, Alpine flowers present an appearance as natural and beautiful as on their native cliffs. Another notable mode of embellishing such surfaces is by the planting of free-trailing and climbing plants above, and allowing them to hang down the face of the wall. By this mode one is enabled to show the full beauty and grace of many fine plants, now mutilated on walls. It is easy to find plants that will curtain the rocks for many feet, the main point being to select kinds that will furnish beautiful or fragrant flowers, as well as a profusion of graceful shoots. For the higher parts, such species of Clematis as



effect. And such opportunities should be taken advantage of as often as possible; for, as pointed out in THE GARDEN in spring, some of the most imposing and beautiful waterfalls in existence have been formed artificially by turning the course of running water over high walls of rock; and this is but one of the many beautiful ends to which such walls may be converted. In their seams and patches of earth brilliant rock and mountain flowers may be grown to any extent. As any "preparation of the ground" must be difficult in such cases, the best and simplest way is to sow a good and varied collection of seeds in the chinks and patches of earth in spring and also in autumn, using in this case extremely hardy kinds, like

C. Flammula and *C. montana*, would be admirable; while for the lower parts and low cliffs, the new hybrid varieties would do well. For the base of such walls there is nothing more appropriate than the more vigorous of the hardy forms (native or exotic) of American plants, and some choice and free-growing herbaceous plants. On the crest of such masses, we have one of the best sites for the placing of fine and distinct tree forms, particularly those of bold or pointed habit, like many of the Pines, and some deciduous trees of erect or pyramidal habit. On the lower flanks and fringes rock and mountain shrubs, dwarf American plants, Heaths, and wild Roses should be introduced.

VILLAGE GARDENS AND COTTAGERS' ALLOTMENTS.

EVERY cottager should have a little garden, in which he should be encouraged to take an interest. This might readily be effected—by apportioning out allotments, in the culture of which he shall be subject to certain mildly restrictive rules, and to a periodical inspection, resulting at the close of each season in the distribution of prizes amongst those who have proved most successful in their management. The importance of such a movement has been recently brought prominently under my notice, in connection with a scheme of this sort, which has been ably and practically carried out at the village of Brantingham, some twelve miles distant from Hull, by Mr. Kingston, gardener to Christopher Sykes, Esq., M.P.; and so much impressed am I with the value of the results, that I have no hesitation in submitting to your readers a general outline of the mode of procedure, which has now, as the result of considerable experience, received such modifications as practical working through a series of years can alone give. Having myself assisted in the adjudication since the commencement, I can with confidence bear testimony to the important change which has taken place in the appearance of the village. Nor is the improvement confined to the gardens and allotments alone, but extends its influence to everything about the cottages; neatness and order pervading the whole of the out-buildings. Surely, therefore, I cannot be wrong in thinking that the healthy stimulant which a competition gives may find numerous emulators through the country. In many cases (as in the one I allude to) nearly the whole village is the property of the squire, whose residence adjoins thereto. In that case the expenditure of a few pounds by the owner, and a little organisation and trouble on the part of his gardener, will lead to invaluable results. But its advantages are by no means confined to small villages alone. Where the owners are numerous, what easier than to form a society—a horticultural society in the truest and highest sense of the word, as distinguished from a “flower show society?” There are towns in which allotments may be counted by hundreds, and even tens of hundreds, where the stimulant of competition has never been thought of. Surely the landlords, who are receiving a double return in the shape of a good rental and a thorough working of the land by spade labour (in the highest degree conducive to its permanent improvement), would find it—setting aside even philanthropic motives—to their interest to contribute to a prize fund, and to any expense incurred in the competition; nor do we think the tenants themselves would object to add their quota in the form of an entrance fee or such like. Tastes vary; some of the allotment holders may have a partiality to flowers; others to fruit and vegetables; others, again, to the more marketable commodities in the way of Potatoes, Carrots, Turnips, &c., all of which have a ready saleable value in the neighbourhood of large towns. These variations would obviously lead to a system of classification, each separate group competing within itself. An important point in all such competitions, and one followed out in the case in question, rests on the fact that adjudication is not the result of one inspection, but of three periodic inspections; thus, as it were, keeping the interest continuous during the season. And, what is more, the services of a different set of judges for each inspection might readily be secured, thus avoiding even the possibility of favouritism. Though at first sight this change of judges may appear impracticable, yet it is easily worked by fixing a certain numerical value to the various gradations of excellence—such as bad represented by one; moderate by two; good by three; very good by four; excellent by five. The sum total of the three adjudications will generally be found to reduce the numbers amongst the competitors to a very small limit, and not unfrequently to leave the best tenant alone as master of the situation. Were the competition on a very extensive scale, possibly it would be best to use numbers alone; the various gradations, from bad to excellent, being represented by numbers extending from one to ten. This system of having a standard to work by obviates the necessity of attempting the impossible task on the part of the judges of carrying in the mind's eye the various perfections or imperfections of each of the competing gardens. In competitions of this class, it would be necessary to remunerate the judges; but in villages there are always able men for the purpose to be found in the gardeners of the neighbouring gentry, who would willingly give their services for this purpose, and consider the stimulus to horticulture and the benefits they thus assist in conferring on their fellow-men ample reward for their trouble. Possibly it may interest your readers to give an illustration of a bit of originality I noticed on the occasion of my last inspection of the gardens at Brantingham. The season just passed has been unprecedented for its dryness, and, indeed, general ungeniality for anything like a floral display. The soil in the neighbourhood is of a somewhat sandy nature, the village lying at the base of a ravine occurring in the chalk hills, drying to an uncomfortable-looking whitish crust even soon after it is watered.

Some little distance therefrom there is a boggy locality, with soil almost ebony black. Now, a happy thought suggested itself to one of these cottagers to use this black soil as a top dressing amongst his plants; and what was the result? That the golden hue of his variegated Geraniums and his Thyme was doubly intensified; that the silvery purity of his *Cerastium* border was rendered more silvery by contrast; and that, while bringing out the beauty of the colour, the black bog soil answered the purpose of a mulching, whereby the moisture was retained in the soil as effectively as by the use of those unsightly materials that are generally recommended for this purpose. Here is a wrinkle for my gardening friends worthy to be chronicled far beyond the boundary even of our big county of Yorkshire. So much for originality. Now let me give an illustration of the change which may be made—or perhaps I ought to say the result which follows a competition of this sort. Last year there was adjoining one of the cottages a somewhat commodious pigstye, measuring perhaps 8 feet by 12 or 14 feet. The cottage was undergoing repairs, and consequently tenantless. The sty was empty, and had been so for some time, as there was a most luxuriant crop of Docks and Nettles therein. This year the scene is changed as if by fairy wand; the pigstye has been removed some distance to the rear of the house—and very properly too; and, in lieu of Nettles and weeds of all sorts, a flower bed almost as perfect as those even in Battersea Park presented itself, the boundary wall covered with creepers, growing and flowering as freely as their predecessors (the weeds) had done, and the little garden a very model of beauty, originality, and industry combined. This is a mere sample of what changes may be worked out by calling into play a wholesome competition.

A novel feature was introduced into our village gardens this year for the first time, in the addition of a spring flower competition, as represented by class 4. At the adjudication of this, which took place in Easter week, I was unable to be present, but have since learned that the result was quite as satisfactory as attends the wonted summer competitions, the little gardens being gay with Wallflowers, Violets, Pansies, Daisies, Feverfew, and Forget-me-nots, all plants readily and cheaply accessible to the cottagers. If not encroaching too much on your space, I would ask you to kindly insert the rules and regulations, as well as the classes, as defined, and prizes awarded in each class; the former may require slightly modifying to suit local peculiarities, but the principles will remain the same.

JAMES C. NIVEN.

Hull Botanic Gardens.

The following are the rules and regulations:—

1. The allotments shall be let from year to year. Six month's notice shall be given at Michaelmas to leave at Lady Day only. The incoming tenant shall take possession on the 1st day of February.
 2. Every tenant shall pay for the Ringbeck Allotments twelve shillings per year, for the Wooddale Allotments fifteen shillings per year, in half-yearly payments, the first Monday in May and the first Monday in November.
 3. Every tenant shall cultivate the land by spade husbandry only. He shall not be allowed to use a plough or any agricultural implement; nor shall he be allowed to grow more than one-third Corn or Carrots, or two-thirds Potatoes at those rents. Any tenant breaking those regulations shall be charged double rent.
 4. On no account shall any tenant be allowed to underlet his allotment.
 5. The examination of classes Nos. 1, 2, and 3, shall be made three times during the season—viz., in Trinity week, the third week in July, and the first week in September.
 6. The examination of class 4, for spring flowers, shall be made in Easter week.
 7. The examination of Hollyhocks shall be made the second week in August.
- Class 1. For the best managed and best cropped allotment garden.—1st prize, 18s.; 2nd prize, 14s.; 3rd prize, 10s.; 4th prize, 7s. 6d.; 5th prize, 5s.
- Class 2. For the best managed cottage vegetable and fruit garden.—1st prize, 18s.; 2nd prize, 14s.; 3rd prize, 10s.; 4th prize, 7s. 6d.; 5th prize, 5s.
- Class 3. For the neatest and best kept cottage flower garden in Brantingham.—1st prize, 15s.; 2nd prize, 12s.; 3rd prize, 8s.; 4th prize, 4s. 6d.; 5th prize, 2s. 6d.
- Class 4. For the cottage flower garden having the best show of spring flowers during Easter week.—1st prize, 6s.; 2nd prize, 5s.; 3rd prize, 4s.; 4th prize, 3s.; 5th prize, 2s.
- Class 5. For the best four distinct kinds of Hollyhock.—1st prize, 6s.; 2nd prize, 5s.; 3rd prize, 4s.; 4th prize, 3s.; 5th prize, 2s.

THE SHAKESPEAREAN GARDEN.

The Lily.

THE name of the Lily, like that of the Rose, originated in the remotest times, and like the latter again, is probably traceable to some primitive Aryan word. Whether in the beginning it held the etymological sense of whiteness, there is, at present, no positive evidence, but the probability is certainly in that direction; legend and tradition, and the customs of language, having always associated the two things, and employed the Lily, moreover, as a counterfoil to the Rose, when a metaphor was wanted for red and white. At times, indeed, we find Lily and Rose used as convertible terms, one of the old names of the common white, or the Madonna Lily, having been *Rosa Junonis*.* When reading of Lilies, therefore, in an ancient author, and of the Narcissus, and even of the Rose, it is essential to bear in mind that the words sometimes occupy each other's places. To disserve the two names, Rose and Lily, as used in fable, tradition, and poetry, and to dissolve them out of the still broader idea of "Flower," is in truth almost impossible. There is something very beautiful in the association, something that seems to go a great deal deeper than appears on the instant.

Which of the Lilies were in earliest cultivation, and were familiar to the lovers of flowers in the time of Shakespeare—is a matter not difficult to decide. Numerous as the additions have been in modern days, none were brought to Europe between the time of the Romans and the year 1629, when the *Lilium canadense* was received from North America. The common *L. candidum*, or Madonna Lily, is the only species having white flowers with which they were acquainted. They had noticed, however, the scarlet Martagon, commonly called the Turban or Turk's cap Lily; perhaps also the spotted or purple Martagon, the pomponium, and the orange-coloured and erect-flowered bulbiferum. Pliny, who seems to follow Dioscorides, enumerates three kinds; the white (which is clearly the *candidum*), a purple, and a red, which last he says is Syrian; and by this he no doubt intends the Turk's cap, by Linnaeus named *Lilium Chalcedonicum*. With the early gardeners of Western Europe the coloured species, like the white one, appear to have been great favourites, and the eyes of Shakespeare no doubt rested on them in summer mornings—the splendid *Chalcedonicum* in particular. Bauhin registers this one as *Lilium byzantium miniatum*; Parkinson calls it the "Red Martagon of Constantinople." It is a glorious plant, the blood-red and pendulous flowers, which vary in number from two to six, having the petals so much recurved that when fully expanded the blossom becomes nearly spherical. The native countries are Greece and the Ionian Islands; it is vaguely ascribed also to Persia and Asia Minor, but chiefly, it would seem, upon horticultural tradition. The spotted or purple Martagon, the *L. Martagon* (Linn.), called by Clusius and Dodonæus *Lilium sylvestre sive montanum*; by Bauhin *Lilium floribus reflexis montanum*, and by Camerarius simply Martagon, is at once told by the colour, which is different from that of all other Lilies yet discovered; also by its large and almost pyramidal cluster of bloom. The petals are copiously spotted with purple of a deeper shade, and bend back like those of the *Chalcedonicum*, but not so thoroughly. In the wild state it is the commonest of the European species of Lily, stretching from Spain and France all through the central and southern parts of the Continent. It steps even into Siberia, and is figured in "English Botany" as British. The pomponium, or Pyrenean Lily, is allied to the *Chalcedonicum*, and in some respects resembles it, but the leaves are narrow and scattered instead of broad and verticillate; while the flowers are either red or yellow, with black spots. Lastly, the bulbiferum, or common Orange Lily (called by Bauhin *Lilium purpureo-croceum*, and figured by Parkinson as *Lilium aureum*) is told immediately by the flowers being perfectly erect, and by the deep orange-red petals being studded on the upper surface with small projections. It is indigenous to Austria, France, Italy, and Switzerland, and, by the time of Queen Elizabeth, had become very widely diffused by florists and cultivators.

The *Lilium candidum*, the Lily *par excellence*, extends, in

the wild state, throughout the southern parts of Europe, from Corsica to Greece and Turkey. Whether it has ever been found wild in Syria, or anywhere in south-western Asia, or elsewhere, is extremely doubtful. The tall, stiff, and upright stems, 2 to 3 feet high, more or less clothed with leaves that are neither large nor small, and terminating in a noble and well-balanced cluster of five or six pearly white bells, that are neither pendulous nor erect, the spotless petals, smooth upon both surfaces, curving outwards with perfect grace, might well establish it as the empress of its order. Its stateliness it may be rivalled by some of the splendid peerage of the far east, but none, even of the Japanese Lilies, can surpass it in *tout ensemble*, aided as this is by golden anthers, and an odour like that of the Rose. We never need hesitate in accepting this as the Lily intended whenever the term was used with knowledge of the plant, and in the special sense. The early botanists were content to call it *Lilium album vulgare*. Virgil, fifteen centuries before, called the flowers simply *grandia Lilia*, *Lilia alba*, and *Lilia candida*.* With Horace, they were fast-fleeting Lilies;† with Propertius, fair Lilies, and shining Lilies, and silver-white Lilies.‡ Tibullus says the young Roman ladies twined them with *Amaranths* to form chaplets.§ *Hylanome*, in Ovid, wears white Lilies in her hair.|| Shakespeare's Lily, when he used the word specifically, was no other. Thus,

Now by my maiden honour, yet as pure
As the unsullied Lily.¶

And in King John:—

Therefore to be possessed with double pomp,
To guard a title that was rich before,
To gild refined gold, to paint the Lily,
To throw a perfume on the Violet,
To smooth the ice, and add another hue
Unto the rainbow, or with taper light
To seek the beauteous eye of Heaven to garnish,
Is wasteful, and ridiculous excess.**

"To paint," in this admired passage, does not, as in the colloquial, imply the addition of colour, much less a surcharge of crimson or yellow. Just as "purple" denotes brilliant, so to paint is metaphorically, to enrich or adorn. The use of the word in this sense is exceedingly ancient. Plautus, the old Roman dramatist, 200 B.C., applies it to the strewing of the ground with flowers. Cicero, B.C. 52, to the employment of picturesque and expressive words. Chaucer describes

A garden full of leavés and of flowers
Which May had painted with his softè showers. ††

Amid many other passages, to quote which is unnecessary, take just one more, the tender simile in Henry VIII., when the unhappy Katherine forebodes her fate:—

Would I had never trod this English earth,
Or felt the flatteries that grow upon it!

* Shipwreck'd upon a kingdom, where no pity,
No friends, no hope; no kindred weep for me,
Almost no grave allow'd me: like the Lily
That once was mistress of the field, and flourished,
I'll hang my head and perish ‡‡

"Field," of course, is here used in the large and collective sense which it bears in the language of heraldry, not intending a meadow or pasture, but a productive surface, no matter of what tincture; while the "once" refers to the brevity of the flower's endurance. We might almost fancy that in penning these mournful lines, Shakespeare had before his heart the celebrated passage in the musings of Job. "Man that is born of a woman is of few days, and full of trouble. He cometh forth like a flower, and is cut down: he fleeth also as a shadow, and continueth not."§§

The Crown Imperial.

Occasionally, Shakespeare employs the term Lilies in the broad or general sense. In the *Winter's Tale*, for example,

Bold Oxlips, and
The Crown Imperial; Lilies of all kinds,
The Flower-de-luce being one. ||||

The context seems to indicate that having mentioned the

* *Georgic*, iv. 131. *Æneid*, vi. 709; xii. 64. † *Odes*, i. xxxvi. 16. ‡ *Elegies*, i. xx. 37; 2, xiii.; 5, iv. 25. § *Elegies*, 3, iv. 33. || *Met.* xii. 411. ¶ *Love's Labour Lost*, v. 2. ** *Act* iv. scene 2. †† *The Franklin's Tale*, 235. ‡‡ *Act* iii. scene 1. §§ *xiv.* 1. |||| *iv.* 3.

* See Gerarde's *Herbal*, p. 130.

Crown Imperial, he bethought himself that it was a Lily, and that other flowers it was customary so to designate must be mentioned as well. That it counted as a Lily in the Shakesperean age, is plain from Parkinson, for although this writer's "Paradisus Terrestris" was not published till 1629, the names he employs must needs, in such cases, have been established ones and retrospective. The same remark will, of course, apply to the names quoted from Bauhin, whose "Pinax (literally Index or Register) Theatri Botanici," containing all the names which up to the Shakesperean period, had been applied to plants and flowers, appeared only in 1623, or not until seven years after Shakespeare's decease. Forgetting his fealty to the candidum, "the Crowne Imperiall," says Parkinson, "for his stately beautifunesse, deserveth the first place in this our garden of delights, and to be entreated of before all other Lilies." Clusius had already called it *Lilium persicum*, and Bauhin, *Lilium sive corona imperialis*. By the ancients it is not mentioned, though being a native of Persia, it could hardly have escaped notice. Not indeed, until 1576, does it appear to have been brought to Europe. In that year it was introduced into the royal gardens of Vienna, and very shortly afterwards it found its way to England, being included in the Catalogue compiled by Gerarde. Nature produces few plants more remarkable. The leafy stem is 2 feet high. At the very summit is a tuft of erect green leaves, similar to those which proceed from the root. Immediately below the tuft, is a ring of Tulip-like and pendulous flowers, which are either yellow or copper-coloured; and at the base of every one of the six large petaline pieces that compose them, is a white and concave nectary, from which, when the bloom is in perfection, depends a drop of honey. Looking into the flower, as one would look into a bell, it seems to possess six great round eyes carved out of pearl. G.

A PLEA FOR A MORE NATURAL ARRANGEMENT OF BOUQUETS, &c.

HE must must have an artist's eye for colour and form who can arrange a hundred flowers as tastefully, in any other way, as by strolling through a garden, picking here one and there one, and adding them to the bouquet in the accidental order in which they chance to come. Thus we see every summer day the fair lady coming in from the breezy side-hill with gorgeous colours, and most witching effects. If only she could be changed to alabaster, was ever a finer show of flowers in so fine a vase? But instead, allowed to remain as they were gathered, the flowers are laid upon the table, divided and re-arranged on some principle of taste, I know not what, but never regain that charming naturalness and grace which they first had. As to the bouquets put up for market, the less said about them the better. They are mere pillories in which, like innocent children put into the stocks, flowers are punished! Squeezed, tied on sticks, formal and pedantic, the flowers lose their rare charms, their delicacy, their individuality, their exquisite variety of form, every element of floral beauty except colour. They are used as mere pigments. They are poor studies in colour. With what complacency can such a one look upon the merchandise of flowers which is exhibited at every party, every wedding, every congregation of rich people, who torment themselves through untimely hours for the sake of tormenting their host? Look at the atrocious bridal bouquets! If, instead, the bride were to issue forth bearing in her hand a sprig of Orange-blossoms just as it was plucked from the branch, or two or three simple Rose-buds on the one stem, loosely clustered, and with their own fresh green leaves, or a simple white Lily, would not every one feel how superior flowers were for such an occasion, in their own simplicity and individuality, than when, as generally happens, they are smothered up in an artificial heap, in which all naturalness is utterly lost? A single blossom of Carnation with a Geranium leaf; an exquisite Safrano Rose-bud just beginning to open, with a fresh leaf from its own bush for company; a stem of Mignonette, girt round with a dozen fragrant blue Violets; a long sprig of Maurandia Creeper, with its charming blue bells, hanging from a tall wineglass, or carelessly trailing round it,—these, and such little things, confer a pleasure on those who have a sensitive eye for grace and simplicity, which the formal and pudding-like arrangements cannot. We would not be understood as objecting to all masses of flowers, nor to large combinations. For coarser and more distinct effects, they are permissible. But even then, the more they can be made to have a loose, airy, open habit, the finer will be their effect. But first, simplicity, naturalness, singleness, and individualism in flowers.

H. W. BEECHER.

GARDEN DESTROYERS.

Wasps' Nests in Trees.—Are the wasps which have nests in trees a different species from those in the ground? Or has the difference of season anything to do with the position of nest? I ask because during the last two years, when the summers were wet, I do not remember seeing a nest in a tree, but plenty in the ground. This year with a dry summer, I have seen the proportion of three of the tree kind for one of the ground ones as yet.—A. D. C. [There are two sections of British wasps, called respectively "ground wasps" and "tree wasps;" of each section there are three species. *Vespa vulgaris*, *V. germanica*, and *V. rufa*, belong to the first section; and *Vespa arborea*, *V. sylvestris*, and *V. norvegica* belong to the second section, and build their nests in trees and bushes. The plan of construction of these latter nests corresponds with that of the ground wasps, but they seem firmer in texture, and are certainly more capable of resisting the effects of weather; they are impervious to rain, and are so securely fixed among the branches and twigs that the wind however boisterous, has rarely any effect on them. The species to which your query more particularly applies is *V. norvegica*, which has been abundant this year in Scotland—perhaps owing to the drier weather, as you suggest. The young nests, if we may so denominate them, are beautiful and interesting; we have seen some about the size of a tennis ball, constructed among the wiry twigs of the Ling in such a manner as to ensure their safety. This species and its nest appear to have been found at a very early period in entomological science. Fabricius gave it the name of *Norvegicus* because the specimen which he described, then in the cabinet of Mr. Lund, was labelled as from Norway; see "Species insectorum," vol. i., p. 460. Many years afterwards it was re-described by Dr. Leach in his "Zoological Miscellany," vol. i., p. 111, and is so well figured on pl. 50, male, female, and neuter, that there cannot be a doubt of the species. The nest figured there is still in the British Museum, and is labelled "taken near Edinburgh." Dr. Leach named the insect *Vespa britannica*, evidently in ignorance of the earlier name. It is by no means uncommon. We have found nests of this species as large as a man's head in a garden at Leominster; they are built in the branches of several species of Conifer, and also sometimes in Gooseberry bushes. In addition to the authors above named, Villars, Olivier, Ponsler, Zetterstedt, and Smith seem to have been well acquainted with it. We need scarcely add, after saying so much, that the peculiar situation of the nest is dependent on the species of insect, and by no means on the season.—Ed. Field.]

Destruction of Wasps.—Never in my experience can I remember such a plague of wasps as we have had this season; and, if as numerous elsewhere as here, much valuable fruit will be devoured by them. I have found the following simple and safe method of destroying their nests: procure say half-a-pound, or less, of cyanide of potassium; dissolve this in just sufficient boiling water to cover it, then have in readiness some cotton wool, and proceed to where the nests are; saturate a small portion of wool in the poison, then with a stick deposit it at the mouth of the hole, slightly pushing it inside, the entrance must be nearly stopped with the wool; this done, in half-an-hour's time, safely dig out the nests and smash them up. Some nests may require a second dose, but that will be but seldom, if well done at first. Anyone unacquainted with their habits, will be surprised at the number of queens to be found in a nest in October, whereas the workers and males grow weaker and die; and before the end of the year scarcely one will be seen. A few queens will remain at the bottom of the nests, others will take to buildings or any warm sheltered place, wherever that may happen to be, and, in a state of lethargy, they will often pass through the dreary months winter, but, immediately on the approach of warm spring weather, they become re-animated by the heat, and will then issue from their retreat, and seek to find out a suitable place in which to establish their nest. I ought to have said that as soon as the cyanide is dissolved it should be put into a bottle, and be securely corked and labelled dangerous poison.—J. EASTER, in *Gardener's Record*.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Pear Slugs.—These are, as usual, abundant and very destructive. They are, however, readily destroyed by dusting the leaves with lime, ashes, or even fine dry road dust, which adheres to the slimy coat of the slugs and soon kills them.

Ants and Chalk Marks.—A chalk mark, at least half an inch in breadth, around the upper edge of sugar buckets, barrels, &c., will not admit one and into their interior. The same mark drawn on the edges of shelves will also prevent the approach of an ant, as they are not able to crawl over the chalk.—C.

Earth Worms in Pots.—A correspondent of Vick's *Floral Guide*, who had been much annoyed with earth worms in pots, succeeded in eradicating them by watering with ten drops of carbolic acid added to a pint of water. It operated like a charm, killed all the worms, and the plants began to improve at once.

THE ARBORETUM.

A BEAUTIFUL SHRUB.

(RHODOTYPUS KERRIOIDES.)

IN passing through Paris, on May-day of the present year, the shrub which most of all attracted our attention for its novelty as well as beauty, was *Rhodotypus kerrioides*, of which the subjoined is a representation. The illustration reminds one of the single *Kerria*, but as the flower is pure white, the distinction is sufficiently obvious. The flowers are abundantly produced on a graceful-looking shrub, about 3 feet high; the plant is quite hardy; it is easily increased by cuttings, and sometimes by separation of the suckers. In favourable seasons it begins to flower about the middle of April, and continues to bloom



Rhodotypus kerrioides.

throughout the month of May. It comes from Japan, and we know of no subject more worthy of a place in the flower-garden or choice shrubbery.

PLANTING AND MAINTAINING OF UNDERCOVER FOR GAME.

By W. GILCHRIST.

THE planting and maintaining of undercover for game is so closely allied to the general management of plantations, that it is impossible to consider it aright without taking a summary survey of the following subjects connected with arboriculture;—

1. Planting and thinning of young plantations.
2. Thinning, draining, and planting undercover in old plantations.
3. Plants best adapted for undercover.

I.—Planting and Thinning of Young Plantations.

The ordinary method of rearing young plantations where game are numerous is to plant close and thin early, regulating the distance apart according to the soil and situation, also the size and kind of trees to be planted. As a general rule, $2\frac{1}{2}$ or 3 feet apart is wide enough in exposed situations, and 3 to $3\frac{1}{2}$ feet apart where the soil is good and the situation sheltered, or even 4 feet apart if the plants are large. Where there is no game, or where the young plantation is protected from the ravages of game, the young trees may be planted at from 4 to 6 feet apart, according to the soil and situation. This last mentioned method is perhaps the best, where the young trees,

after being planted, are left entirely to themselves until they are fit to be used for stobs, or some other estate purpose; for if they were planted close, and left unthinned until they were suitable for some estate purpose, the most of the young trees would receive a check from which they would never thoroughly recover. To this cause, viz., planting close and neglecting to thin in due time, may be attributed the stunted, overdrawn, and unhealthy appearance, and consequent absence of undercover, which a great many young plantations present. However, I have invariably found, that to plant close and thin early, hardly ever allowing the lateral branches of one tree to touch another, is the only sure way to rear healthy trees, and form good undercover. And one great advantage to be derived from planting close is, that in thinning the first and second time, the healthy plants requiring to be taken out may be lifted with balls, and used for making up wants in young plantations, or forming clumps of undercover in old plantations. No definite rule can be given for the thinning of young plantations, or for the time that should be between the first and second thinning; all this can only be determined after a careful examination of the plantation. But, in general, young plantations, if healthy, will require to be looked over, and a few trees taken out, or a little pruning done every third or fourth year.

Young plantations are sometimes required to be formed and reared, not so much for their value as a crop of trees, but for the purpose of affording protection and shelter to game; and where this requires to be done, we would recommend that the young trees be planted about 6 feet apart, and intermixed with low-growing underwood—such as the Bramble, Broom, and common Whin. The two latter varieties are generally raised by sowing seed in rows, which intersect the young trees both ways. Before sowing the seed the ground must be prepared for its reception. This is done by digging the ground about 6 inches deep and 12 inches broad, leaving it rough on the surface so as to get the seed thoroughly covered. In situations where underwood suitable for cover is found growing natural it should be taken advantage of and cultivated in preference to all others; and, when the soil is suitable, the young trees used should be all evergreens—such as the Scotch Fir, Spruce, and Silver Fir, Austrian, Corsican, and Mountain Pine, and the underwood, though growing among them, should always be kept in check, and not allowed to get overdrawn or to grow too near the young trees. This system of rearing undercover is very extensively practised in some parts of England, where it is esteemed, both for its usefulness and cheapness—two very essential considerations in the providing of undercover.

Young plantations are sometimes formed in the demesne or pleasure-ground, for the threefold purpose of shelter, ornament, and game-cover. Where this requires to be done, a selection of ornamental trees and shrubs will require to be used, and in this promiscuous planting of trees and shrubs, whether in the park, the pleasure ground, or the forest, much attention requires to be given to the individual character of each variety to enable the planter to arrange them so as to bring out their most prominent features in the landscape, and, at the same time, preserve the individual character and appearance of each variety; for whether it be a clump of shrubs, group of trees, or single specimen, the effect which is produced by judicious arrangement is very remarkable. No definite rule for the arrangement of the plants can be given, as a good deal depends upon the nature of the ground, situation, and exposure. Where the situation is sheltered, the young trees may be larger, and planted farther apart, and the shrubs used for undercover should also be proportionately larger. The low-growing shrubs, such as the evergreen Privet, Mahonia, common Laurel, Rhododendron, &c., should be planted in clumps, with perhaps an upright-growing tree, or a Cupressus, in the centre. The Scotch Yew, Portugal Laurel, Holly, and the deciduous shrubs, should be used as nurses for the trees, and for this purpose, as well as for the benefit of the game-cover, they will require to be occasionally cut to prevent them from getting overgrown. The deciduous shrubs that are of a straggling habit, such as the Dogwood, Ribes, and Elder, should be kept in the background, while the Snowberry and Spiræa should be kept nearer the front. The Holly and Elder should be planted in the exposed parts, and nursed with Beech or Sycamore; the Beech makes a capital nurse, as, if cut and kept low, it retains its leaves during winter; the Scotch Fir and Austrian Pine are also well adapted for growing in exposed situations. Clumps of Rhododendrons and Azaleas should be planted along the sheltered sides and rides, with occasionally a single plant of Scotch Yew, Holly, Portugal Laurel, or some of the deciduous shrubs. For the sake of variety, low-growing weeping trees, such as the Kilmarnock Willow, are also admirably adapted for this purpose. In fact, where shelter, ornament, and game-cover is the object, the dwarf trees and shrubs should be planted nearest the front, and the taller ones in the background, and the contrast of size, form, and colour of the different varieties will then show to the

greatest advantage. In a plantation of this description, where hares or rabbits are numerous, some of the shrubs and hardwood trees will require to be protected from their ravages, and for this purpose a quantity of small Spruce branches should be prepared. Have boys following the planters, and put in three or four branches closely around each plant, and bind them together with rope-yarn. In preparing the branches they should be cut with a slant, so as to go freely into the ground. We have practised this method for a number of years, and have found it to be the cheapest and most effective way of protecting shrubs and hardwood trees from the ravages of these animals. In maintaining a plantation of this description, the shrubs must be kept low, and prevented from getting into a confused mass. The trees should be kept thin, and the evergreen ones allowed to remain green and branched to the ground, as it is their natural form, and affords the best shelter and protection to the game.

II.—Thinning, Draining and Planting Undercover in Old Plantations.

What I wish to be understood by the term old plantations, is plantations from thirty or forty years old and upwards. Plantations of this description are to be found on almost every estate; and unless where they are chiefly composed of Firs, and have been under good management, they are generally devoid of undercover, although some of them possess plants suitable for that purpose, such as the Black-thorn, Bramble, Briar, wild Raspberry, Broom, common Furze, Birch, Willow, Hazel, and other natural copsewood plants; but instead of these plants, which are naturally adapted for undercover, being kept in check, they are generally found striving for the mastery over the standard trees, and preventing the free circulation of light and air, thereby impairing the health of the trees, and deteriorating from their value as a crop.

Plantations of the above description only require to be judiciously thinned, and the overgrown underwood cut close to the surface, and the ground thoroughly cleared (by burning or otherwise) of all brushwood or decayed branches, also the drains cleaned and new drains made where necessary, and in two years the undercover will be in a condition to please the most fastidious sportsman. In corroboration of this statement, I will give a description of a plantation that came under my notice a few years ago. It consisted principally of hardwood trees, about fifty years old, a full crop of which was on the ground, plants naturally suited for underwood were also in abundance, but they were so much overgrown, that they had become quite open and bare below. As Brushwood was required for estate purposes not far from the plantation, the whole of the underwood was cut close to the ground and the best of it taken away. Immediately thereafter, the trees were regularly thinned, and the ground thoroughly cleared of all brushwood and branches; these operations were done in the summer season, and in the month of December following, when the gamekeeper and proprietor went through on their annual shooting excursion, they agreed that, however bad it was before, it was now thoroughly spoiled; however, the following season, the underwood and natural Grasses had grown so well, that they as unanimously agreed that they had never seen the undercover of any plantation so much improved. The successful growth of the undercover in this plantation was entirely owing to the brushwood and branches being cleared away, thereby allowing the light and air to have free circulation, and causing the natural Grasses and the shoots from the underwood to grow freely at first; seeing that clearing the ground of the brushwood and branches is so beneficial to the maintaining of undercover, it is very much to be regretted that, in thinning plantations that are overgrown with underwood, the common practice is to spread the brushwood and branches all over the ground. This practice, though common, is very detrimental to the maintaining of undercover, as there is no surer way to stop the growth of underwood than to cut it close to the surface and leave the brushwood spread over the ground.

Plantations with a full crop of trees, but no underwood suited for cover, and in plantations of this description cover for game must be provided artificially. This is generally done by planting such plants as are considered suitable for undercover, and in some instances, where the plants are well selected, and the ground thoroughly prepared, the system produces the desired effect, but a much less expensive and surer method of obtaining cover for game in plantations of this description is to give the trees a regular thinning, and afterwards gather together all the branches and brushwood, and put them up into heaps about 4 to 8 feet high, and 10 to 18 feet in diameter. These heaps are erected by driving a stob into the ground, and putting the shortest of the branches round about it. For the sake of stability, these short branches should be pointed and stuck firm into the ground. Keep the branches close at the top and open below, using the larger branches as the work proceeds, and turning them end for end alternately, so as to get the points of some of the best furnished branches

to the ground. In finishing, have the branches spread well out and rather flat, so as to allow Grass to grow up through them in the summer season (for it must be remembered that there is no better cover for hares than good natural Grass); and the branches being laid nearly flat, keep the Grass up during the winter. These artificial heaps are sometimes formed round the bolls of the trees; and near the outside of plantations to break the view, and also near to the places where the pheasants are fed. A few well-furnished branches or tops should be pointed and stuck into the ground, in places where there is the appearance of low-growing underwood, such as the Honeysuckle and Ivy, as they grow up through the branches and form nice clumps of cover, which are generally very productive of game when the shooting day comes. If there are any small Beech or Thorn trees growing in the plantation, they should be cut half through, about 2 or 3 feet above the ground, and laid down flat. These trees being only cut half through continue to grow, and have all the appearance of low-growing underwood; and though at first sight they are not very pleasing to the eye, they soon come to be useful for game-cover.

This method of forming and maintaining undercover for game is considered by all who have given it a fair trial to be the surest and most economical way of providing undercover in plantations, where there is no natural underwood suited for that purpose; and its beneficial effects are realised in one year by the increase of game, as in a portion of a plantation on the estate treated in this manner the increase of game in one year was seven-fold. It is also specially adapted for outlying plantations, where there is a full crop of trees on the ground, as it can be renewed every time the plantation is thinned; in fact, the branches of every tree that is cut should be put neatly up into heaps to maintain the game-cover.

Old plantations, where there is not a full crop of trees on the ground, and also a deficiency of plants naturally suited for undercover.—Some practical men may consider that the best way to make a plantation of this description a good game-cover is to cut it down and replant it; and, no doubt, where the trees have almost arrived at maturity, looked at from a pecuniary point of view, this would be sound practice; but in a great many instances, and more especially on small estates, these old plantations are not valued by the ordinary rule of pounds, shillings, and pence, but they are valued and prized for the shelter they afford to the adjacent lands, and the beauty and ornament they impart, not only to the estate, but to the whole of the immediate neighbourhood. Where plantations of this description have been under good management, no thinning will be required farther than taking out any trees that may seem to have arrived at maturity. On the contrary, where they have been neglected, they will require to be gone over and thinned very carefully, leaving the healthiest and best furnished as standard trees, and taking out all such as are overdrawn, or are encroaching too near any of the standards, and also all those that are stunted in growth and have an unhealthy appearance. As we are presuming that there is not a full crop of trees on the ground, there will probably be some portions where the trees will be too close, and other portions where there will only be a tree here and there, so that in thinning it will be better not to attempt to have the trees at regular distances from each other, but rather have them in groups, and clear out the open spaces of the ground so as to get good large clumps of trees or shrubs planted to form undercover. After the trees are cut, the best of the branches should be gathered and put up in heaps (as formerly described) where the trees are closest, after which the brushwood should be burnt and the ground thoroughly cleared. If it is not necessary to use the branches to form undercover where they are cut, they should either be burnt or carted away to some plantation where they are required.

Before proceeding to plant any undercover all the old drains should be examined and cleaned out, and new ones formed where they are required, after which the planting of undercover may be proceeded with; and, in selecting the varieties of plants to be used, the planter will generally be guided by the wishes of the proprietor and by local circumstances, such as whether plants of a suitable size and variety can be had in the district at a reasonable outlay. Some recommend the planting of deciduous plants, such as the Hazel, Birch, Willow, Mountain Ash, &c., and cutting them down regularly when they are fit for cratemakers' or other purposes. This system of rearing underwood may realise a little money; and, no doubt, in plantations where deciduous plants are growing naturally, or as coppice woods, they make admirable undercover if well managed; but, nevertheless, it is impossible for undercover formed chiefly of deciduous plants to afford the same protection to game, or have the same clothed appearance, as where it is formed with evergreen plants. Therefore, we would recommend that, wherever undercover requires to be planted, only evergreen trees and shrubs should be used, except where a variety of plants are required for ornamental purposes. Our own method of

forming undercover in plantations of this description is to plant large clumps in some of the open spaces, with well-furnished plants of Spruce and Scotch Fir, from 3 to 4½ feet high, and about 6 feet apart, mixing them well as possible so as to get the Scotch Fir taken out as the Spruce grows up. The Scotch Fir, not being a plant suited for undercover, is only used as a nurse for the Spruce, so that where the Spruce Fir can be had in sufficient quantity, the Scotch Fir should not be used. We also occasionally use the Austrian, Corsican, and Mountain Pines to form groups of cover in exposed parts of plantations, where neither the Spruce Fir nor any of the evergreen shrubs would succeed well, unless protected from the cutting winds which prevail at certain seasons of the year. These evergreen trees must be kept very thin, and allowed to remain green and branched to the ground. In the other spaces we plant small groups of Scotch Yew, Holly, and Portugal Laurel; and in the sheltered and shaded parts we plant clumps of evergreen Privet, Mahonia, common Laurel, Rhododendron, &c. Each variety is arranged in separate clumps, each containing from ten to a hundred plants and upwards, according to the situation and extent of the plantation. The distribution and arrangement of the different shrubs described in a former part of this paper is equally applicable to this, except that the groups and clumps in old plantations are made larger, and consequently more space will be allowed to intervene between the clumps, so as to admit the free circulation of light and air; but we would specially recommend the planting of low-growing trees or shrubs along the "rides" and margins of plantations, as being suitable for the preservation and protection of game. In planting these shrubs, the whole secret of success is in the thorough preparation of the ground. This may be done by making large pits, and adding some suitable soil when planting, or, what is much better, to trench the ground 18 inches deep where the group or clump is to be planted, and at the same time adding some suitable soil if it is required. The plants used should be a good size, well rooted, and of a bushy form; and we consider that to plant them close together and in groups and clumps, is a much speedier and surer way of securing cover for game than the general way of planting single plants about 6 feet apart. The advantages in favour of planting in groups or clumps are fourfold, viz:—1. Being planted close, they provide immediate protection and shelter to game. 2. Plants are healthier in appearance, and grow faster in groups or clumps, as they receive shelter from each other. 3. Groups or clumps of undercover are more ornamental and less tantalising to the sportsman than a mass of underwood without any arrangement. 4. The plants being planted close together in these groups or clumps, they serve as nurseries, from which plants may be taken to form undercover in other places; and, moreover, after the plants in these clumps have been thinned out and thoroughly established, an almost unlimited supply of plants may be obtained from some of the varieties, by layers. These layers are got by pegging the side branches to the ground till they are rooted, when they should be detached from the stem and allowed to remain for two years, after which they may be planted to form undercover elsewhere.

Where undercover is judiciously thinned and pegged down, no cutting over will be required for a number of years; but as most of the plants used for undercover have a tendency to get overdrawn and bare below, they will require to be cut down occasionally, even where they are under the best management. However, this cutting down should not be all done in one year, but a portion of it should be done every second or third year, not cutting it down straightforward, but cutting down portions here and there, so as to keep up a regular supply of undercover all over the plantation. The quantity to be cut down at one time must be regulated by the size of the plantation, quantity of undercover, and other local circumstances.

III.—Plants Best Adapted for Undercover.

This to the planter of undercover is the most important part of our subject, as the success or failure depends in a great measure, on the proper selection of plants to suit the different soils and situations. We will, therefore, endeavour to give a descriptive list of the plants that are best adapted for the maintaining of undercover for game.

Norway Spruce (*Abies excelsa*) is admirably adapted for forming clumps of undercover in old plantations, or for planting as a nurse in mixed plantations. Being abundantly furnished with branches, if thinned in due time, and its branches allowed to remain green to the base, it forms good shelter and cover for game. On dry soils or exposed situations it invariably becomes stunted in appearance, and dies prematurely. Suitable for a great variety of soils, it thrives best in a moist loam and sheltered situation.

American Spruce (*A. nigra*), a dark-green variety, well suited for ornamental planting or game-covers, as it is impervious to the attacks of hares and rabbits; specially adapted for planting in poor soils and exposed situations; but like most of the Spruce tribe, it thrives best in a moist loam and sheltered situation.

Austrian Pine (*Pinus austriaca*), if planted and kept thin, so as to allow its branches to spread, is well adapted for cover in exposed situations, along with the Holly and Elder. Being naturally of a spreading habit, and a rapid grower, it is well worthy of being more extensively used; but as it is liable to be injured by hares and rabbits, it should be protected for a few years, where these animals are numerous. Plants that are intended for planting in old plantations should be of a bushy form, well rooted, and from 2½ to 4 feet high. The Austrian Pine is quite hardy, and thrives in a great variety of soils and exposures.

Corsican Pine (*P. Laricio*).—This tree is not so well adapted by habit for cover as the Austrian Pine, its only recommendation being that it is not liable to be injured by hares or rabbits. It thrives in a great variety of soils, and is very much valued as a fast-growing hardy tree.

Mountain Pine (*P. montana*).—This is the best of all the Firs for forming undercover, as it is of a low spreading habit, very hardy, and thrives in a great variety of soils. Being of slow growth and dwarf habit, it cannot be recommended as a useful timber tree, and should only be planted so as to intermix with the other trees for the purpose of maintaining the undercover.

The Cluster Pine (*P. Pinaster*).—This is the most suitable tree of the Fir tribe for "planting and maintaining cover for game" in exposed maritime districts, as its branches, when young, are naturally of a low spreading habit, and it seems to grow best when exposed to the influences of the sea breezes. It is suitable for a great variety of soils, but thrives best in a light, dry, sandy loam.

Azalea pontica, a slow-growing hardy shrub, well worthy of being more extensively cultivated, suitable for planting along the sheltered sides of plantations; is not liable to be injured by game, and besides flowering in summer, it has very ornamental foliage in autumn. It thrives best in rich peaty soil and sheltered situations, but will grow well in any light dry loam.

Box tree (*Buxus sempervirens*) is a slow-growing hardy shrub, specially adapted for planting in ornamental plantations, as it is not injured by hares or rabbits. It thrives well under the shade of large trees, and forms excellent cover for all sorts of game. Soil, light sandy loam, and situation sheltered.

Bramble (*Rubus fruticosus*) is found growing natural in a great many plantations, but in "game preserves," where it is not found, it is well worthy of being introduced, as, from its free-spreading growth, there are few deciduous plants better adapted for the protection of game. In young plantations it requires to be cut back every third or fourth year, to prevent it encroaching too near the young trees. It luxuriates on a great variety of soils and situations. The price is also very moderate.

Common Broom (*Cytisus scoparius*) is sometimes raised from seed for the purpose of forming "game-cover," but is generally found growing natural. It is one of the best plants for maintaining game-cover; for, although it should be partly destroyed by game in the winter season, it soon regains its former healthy appearance. It thrives best in light gravelly soils and exposed situations. To maintain good cover it should be pegged to the ground or cut down every fourth or fifth year.

Elder (*Sambucus nigra*) is principally adapted for planting in exposed situations as a nurse to the Holly and Pines. Its hardness and rapid growth are its principal recommendations for game-cover. It will grow on almost any soil, but thrives best on deep loam moderately moist. To maintain efficient cover it requires to be cut down every second or third year. The Beech, Sycamore, and Birch can be grown as copsewood in the same situations.

Common Holly (*Ilex Aquifolium*) is very liable to be injured by hares and rabbits when first planted, and should, therefore, be protected for a few years till it is beyond their reach, and even some of the old plants will require to be protected with Spruce branches during a severe winter. It is the best evergreen shrub for planting in exposed situations, and it is also specially adapted for planting in groups on the outside of plantations. It thrives best on rich loam containing a quantity of vegetable matter. Being considered a shy grower at first, the plants should be well rooted before being removed to the plantation.

Common Laurel or Bay (*C. Laurocerasus*).—This is one of the most free-growing evergreen shrubs, suitable for a great variety of soils, but grows best on a light loam with a dry bottom, and moderately sheltered; liable to be injured by hares and rabbits when first planted; but, if the plants are large and well-rooted, it soon grows beyond the reach of these animals. Being naturally of a low-spreading habit, with its branches generally reclining to the ground, and a very rapid grower, it is admirably adapted for the maintaining of "game-cover." After it is thoroughly established, it will require to be cut back or pegged down every sixth or seventh year; in fact, the more it is cut back or pegged down it seems to grow the faster.

It is best adapted for planting in clumps, and can be propagated by layers or cuttings.

Portugal Laurel (*C. Insanica*).—This, like the two former, is very liable to be injured by hares and rabbits when first planted; and should, therefore, be protected for a few years where these animals are numerous. Large plants of it are difficult to transplant, unless they are well rooted. Being of a compact habit it is well adapted for planting, either in groups or single specimens. It stands cutting well, and can therefore be kept to any size. Soil most suitable, rich loam, and situation moderately sheltered.—*Mahonia Aquifolium* is a low-growing hardy shrub, well adapted for forming clumps of undercover for pheasants; but, as it is generally destroyed by hares and rabbits, it cannot be recommended where these animals are numerous. It thrives well in any light loamy soil, if the situation is sheltered.

The Privet (*Ligustrum vulgare*) is a plant well adapted for forming clumps of undercover, and is one of the cheapest and easiest cultivated plants that can be used. It is a very rapid free grower, thrives on a great many varieties of soils, but requires a moderately-sheltered situation. It should be pegged to the ground or cut every sixth or seventh year. A great many young Privet plants are choked by Grass and other weeds after they are planted. They are also sometimes destroyed by rabbits. The Privet can be readily propagated by cuttings in any ordinary soil.

Rhododendron (*R. ponticum*) is the best of all evergreen shrubs for the "planting and maintaining of game-cover," as it will thrive on almost any description of soil, and is perfectly hardy, and in the most severe winters is never injured by hares or rabbits. It may be grown as single plants, but is specially adapted for planting in clumps. After the plants are thoroughly established in these clumps, they should be regularly pegged to the ground every year, as the more the *Rhododendron* is pegged down the faster it grows. When the clumps get too thick, the plants can be removed and planted elsewhere, as it stands transplanting well, even after it has grown to a large size. In fact, wherever permanent game-cover is required, the *Rhododendron ponticum* is quite indispensable, especially in old plantations. It thrives best in good peaty soil and sheltered situations.

Scotch Yew (*Taxus baccata*) is a very ornamental and useful evergreen shrub, well adapted for planting either as a single plant or in groups; thrives well under the shade of trees, but is of very slow growth for a few years after being planted. Its leaves are poisonous for cattle and sheep, yet it is often injured by hares and rabbits. It should, therefore, be protected for a few years till it is beyond their reach; thrives best in a sandy loam, and moderately sheltered situation.

Sea Buckthorn (*Hippophaë rhamnoides*) is specially adapted for planting in maritime districts, either as a nurse for the *Pinaster* or for the formation of "game-cover;" being of a straggling habit, it is well suited for this last-mentioned purpose, and is well worthy of being more extensively used, as it will luxuriate on the sea-coast, in exposed situations, and at an altitude where few other trees would grow; it thrives best in a deep sandy soil, but will grow in almost any ordinary soil; it can be readily propagated by layers or suckers.

Snowberry (*Symphoricarpos racemosus*).—This is a low, free-growing, deciduous shrub, well adapted for forming undercover, as it is seldom injured by game, even in severe winters. It luxuriates in any light free soil; and when once planted and established, it throws up numerous suckers from the roots, which soon spread over the ground. Its berries are very ornamental in the autumn and winter months.

A great many more plants may be used for undercover where there is little or no game to contend with; but as our subject is the "planting and maintaining of undercover for game, with an account of the plants best adapted for that purpose," the foregoing must be considered as selected according to the best of our knowledge. And, in conclusion, we beg to state that this paper may be considered more as a practical report than as a "finished essay," for we have recommended nothing to be done but what has been proved by experience to be beneficial to the "planting and maintaining of undercover for game."—*Transactions of the Scottish Arboricultural Society.*

The Sea Buckthorn (*Hippophaë rhamnoides*).—This native shrub, of which we seldom make effective use in the southern counties, is very striking in groups and clumps on the lawns in the northern part of Scotland, near the sea. The *Fuchsia* at Dunrobin, as in various parts of Ireland and the Isle of Man, forms the most beautiful of all hedge plants.—*M.*

Durability of the Catalpa.—The *Germanstown Telegraph* says that timber of the *Catalpa* which has been in use many years in Delaware and other places, has proved equal to the Chestnut in durability when used as posts, and in other particulars it has been found of great value. Its rapidity of growth is also mentioned, the annual rings being found from a quarter to half an inch thick.

THE KITCHEN GARDEN.

BEETROOT IN MARKET-GARDENS.

BEET is a vegetable which is much appreciated in the London markets, and one which is very accommodating in regard to culture. The main sowing is made to succeed Wallflowers, Radishes, Spinach, or Cabbages, and it is often, also, grown on Asparagus ridges, between rows of fruit bushes, and between lines of Vegetable Marrows, and even when grown in the open field, it permits of being intercropped. It is also an accommodating root in winter, as it may either be left in the ground and thence marketed, or lifted and stored, as may be convenient to the grower, who may want the ground manured and trenched for Radishes or other spring crops. Dark crimson coloured Beets are those which are most esteemed by market-gardeners, most of whom grow their seeds saved from select plants having I think the Red Castelnandary and Dwarf Red for their parents. Carter's St. Osyth is a favourite Beet with many growers. Although Beet does best in an open situation, it is not in all cases that such a position can be assigned to it. The ground in which it is to be grown should not be manured beyond what it received for the previous crop, as freshly-manured ground causes the roots to fork, thus materially lessening their value. The soil should be deeply worked, however, in order to give the roots a downward tendency unchecked, and in this way fine clean medium-sized, entire roots are obtained. Such roots always fetch good prices. The first sowing is usually made where the plants are to remain, in lines about 15 inches apart, in the first week of May. Cleared ground is not always employed for this sowing, but, as a rule, the lines are drawn between rows of Cabbages or Lettuces, recently planted; after they germinate they are thinned a little with short hoes, and again when they form a few rough leaves they are thinned out to single plants. Many open the drills in the morning and sow the seeds in the afternoon, thus ensuring, they affirm, earlier germination than would otherwise be the case. Mr. Pocock raises good Beets after Wallflowers are cleared off between the rows of Gooseberry bushes. Mr. Dancer, of Fulham, and others, sow Beet seed on either side of their Asparagus ridges, but; thus circumstanced, they do not grow large. Transplanting Beets is only resorted to to fill up vacancies in the rows, as in the operation the main roots are often broken or otherwise so damaged, as to render it almost impossible for them to produce good roots. Some make a sowing in March in a sheltered piece of ground, for yielding an early supply. In harvesting a field of Beet where the roots have to be kept through the winter, the roots are carefully dug up, preserving the whole length of the root intact, and keeping 2 inches of the crown attached to it after the leaves are removed. They are first stored in pits, 4, 5, or 6 feet wide at the base, tapering about 3 feet in height. They are then covered with straw, over which a coating of soil is put to exclude frost. Leaving the roots in the ground is reckoned the best plan, as their proper flavour is thereby preserved better than when lifted and stored, but they are liable to be injured by frosts in January, or to be locked in the soil when it might be convenient to send them to market. Some of the darkest and finest shaped roots are kept for seed-bearing plants, and are planted in some out-of-the-way nook by themselves.

F.

MARKET GARDEN TURNIPS.

SPRING TURNIPS are produced in quantities round London, but supplies for summer, autumn, and winter, are mostly furnished from a distance of ten or more miles from the metropolis. The Fulham Fields and Greenwich Thames Level are too high-rented to be devoted to late Turnip culture, but early outdoor and forced ones are raised in these districts in large quantities. The Early White Dutch is the variety commonly used for spring work. The seeds are, sometimes, sown on gentle hot-beds under frames, and sometimes on similar beds covered with litter, or hoops and mats. When grown under frames the routine is the same as that practised with most kinds of plants raised from seeds. The method of growing them in hotbeds without frames is as follows:—Pits are cast out 18 inches deep, 6 feet wide, and of any length, and firmly filled

with manure; over this a coating of soil is placed and rolled or beaten solidly with the back of a spade; the seed is then sown, slightly covered, and finished off by rolling again; hoops and mats are then fixed over the beds, and, in the event of hard frosty weather setting in, some strawy litter is added to the covering. If at all practicable, the mats are partly unfastened and let down every day so as to admit light to the young plants; and, as soon as it can be done with safety, they are removed from the beds altogether, but are left erect around their sides in order to ward off winds. Turnips are sometimes grown without the aid of either frames or hoops and mats, on hotbeds like those just described, and in this way I have seen excellent Turnips produced. When the seed is sown the beds are merely protected by means of a layer of litter, which is put on and off as in the case of Radishes. The earliest sowing is made in the last fortnight of January or early in February, and main sowings of the Early White Dutch, or White Stone, but generally the former are made broadcast on a field about the end of February, or in March, to be succeeded by another sowing made in April. After the plants come up they are thinned, and the surface-soil is at the same time loosened by means of small hoes. The largest roots are first drawn for market; thus the plants get thinned, and those that remain have more space for development. Some use the space between the lines of frames for growing Turnips; and well it answers for that purpose, as, owing to the soil being under the general level, it keeps comparatively moist, and the belts of frames protect them considerably from inclement weather. Spring Turnips are generally got off the ground in good time, to permit of its being cropped with French Beans, Summer Cabbage, Spinach, or Celery. Turnips for autumn use, and also the winter ones, consist chiefly of the White Stone, which is a beautiful white-rooted sort, which cultivators generally sow on ground just cleared of Peas, and send them to market in winter. In February, Turnip Greens are usually a valuable part of the crop. W.

A Normandy Vegetable Market.—One has to push through throngs of basket-women to reach the fruit and vegetable stalls. The clatter, the laughter, the gesticulation and harangues of a keen-faced dark-eyed man, in a blouse, who is selling an immense pile of Melons by auction—all the merry sounds so indescribably French, are bewildering, but they seem to fill the place with sunny mirth. It is a bright morning, too, after the rain, and the sun seemingly revels among the Potirons and Citronelles lying about in front of the stalls, some of them with a slice cut out, glowing with the delicate golden tint within. Beside the stall is a heap of tin and wooden measures, and on these lies an open sack of Cornichons, another of rosy Onions; in front is a basket of large white Radishes, a heap of orange Carrots, glowing against their feathery foliage, and a bunch of silver-skinned Leeks; Cabbages, not crammed out of sight in a basket, but arranged on the stall so as to show their exquisitely-veined leaves to the best advantage; a few creamy Cauliflowers, placed temptingly beside a pile of scarlet Tomatoes; and, raised higher, so as to be more under the shadow of the canvas overhead, are Plums and Peaches and Grapes. The Pears are not unpacked yet, but they lie brown and tempting in the mouths of their open baskets. There does not seem any attempt at effect, and yet everything is placed in happy harmonious contrast; the Turnips and Carrots have been carefully washed; everything is at its brightest and best; no one seems to have a care or a trouble on market day. Our friend, the Melon auctioneer, is having a fierce battle with a woman as sharp-looking as himself. He has been brandishing a clasp-knife so close to his own thin nose that the effect has been alarming; and now, as his customer flattens her nose on the Melon, in the endeavour to test its soundness, he snatches at the fruit and plunges the knife into it, as if he were stabbing an enemy; he hands her the slice, but she shakes her head. "Gathered green," she says, with a smile. She turns away, and our friend stamps, and, catching sight of us, holds out the Melon. "Gathered green!—ma foi—smell it," he screams; "taste, and then see if it is not the cheapest of Cantaloups, only one franc-and-a-half for the best fruit in the market."—K. S. MACQUOID.

Fairy Rings at Rothamsted.—It is rather remarkable, considering how largely Fungi abound in nitrogen and require ammonia as manure, that in my Grass experiments the only places where the Fairy Rings abound are upon those spaces in which mineral manures alone have been used, and where no manure containing ammonia or nitric acid has been applied for twenty years. Where the two latter substances have been used, either with or without mineral, I am unable to find any of the Fungus tribe.—J. B. LAWES, Rothamsted.

CHANGE OF CLIMATE IN SCOTLAND.

MR. M'NAB some time ago (see p. 238, Vol. V.) made some remarks on this subject, the drift of which was to the effect that, as compared with forty or fifty years ago, a perceptible change to a lower summer temperature has taken place. This opinion is based, so far as appears, entirely on the growth, or defective growth rather, of various of the less hardy trees and shrubby plants, several of which are enumerated—such as the Myrtle, the Acacia, the Almond tree, the Hydrangea, the Arbutus, and others. The comparatively unsatisfactory growth of the Larch now-a-days is also adduced as a proof of diminution of temperature. Indeed, the general belief is that our summers now, in point of temperature, are not what they were.* Mr. Buchan, secretary of the Meteorological Society of Scotland, however, is of opinion that little or no change has taken place. The current notions about a change in climate includes not only a lessened summer heat, but still more—a change in the direction of a higher temperature, or less severity in winter. In a word, that the summers are cooler and the winters milder than, say, fifty or sixty years ago. What, however—and it is, perhaps, the crucial point—do the meteorologists say? How far do tabulated results strengthen the case for a change of climate? Unfortunately, there is for the early period indicated by Mr. M'Nab no official data at all. The Scottish Society has only been in existence since 1855, and its labours do not therefore include a period of much more than fifteen years. Observations of a reliable kind, and for longer periods, are extant, but even they do not extend backwards far enough. We have the results then, for fifteen and about thirty years respectively, but there is nothing of an earlier date to compare them with. It is very interesting to notice, by the way, that the difference between the mean temperature of these two periods is infinitesimally small. Edinburgh, for example, in the tables furnished by Mr. Buchan, shows in the one table 46°·9, in the other 47°·1; Arbroath, 46°·5, and 47°·0 respectively. As an example of the influences of the western sea in equalising the temperature on the west coast, the case of Bute may be added (although not from the same tables), which shows nearly three degrees less than Edinburgh, and about a degree and a half less summer heat. Here the case may be supposed to break down for want of evidence. Lately, however, in going over some old volumes in the *Scots Magazine*, it was observed, that for a considerable number of years a table of daily thermometric observations in the vicinity of Edinburgh was printed. And it was thought that the data obtainable from these records might, in the absence of official returns, be available for the purposes of comparison. The mean temperature deducible from the figures was therefore worked out for the three coldest and warmest months for a period of thirteen years at the beginning of the century, and the results are presented below, along with a table of the mean temperature of Edinburgh, for the same number of recent years, extracted from the *Journal of the Meteorological Society*. The question, however, immediately arises, how nearly these earlier observations correspond, as to the time of day at which they were made, and so on, with those on which the Society's tables are based. The latter indicate the mean of the maximum and minimum temperature of each day of twenty-four hours. The observations in the *Magazine*, on the other hand, must have been made without the aid of the more exact modern instruments, for as yet registering thermometers, although invented, were imperfect and not in general use. Hence, instead of the daily maxima and minima of the recent tables, we have a daily observation "in the morning before sunrise," and again "at noon." These, however, although failing perhaps to give the very highest and lowest point, will probably indicate a pretty close approximation to the true mean temperature, inasmuch as the times of examination may be considered about equally distant from the extremes. The figures in the first column are, as has been said, based on an induction of thirteen years; and include the year 1801, and from 1804 to 1815 inclusive. The intermediate years were not accessible.

	Mean temperature for thirteen years from 1801, &c.	Mean temperature for thirteen years from 1857 to 1869.
WARM MONTHS.		
June	57°·6	55°·6
July	61°·0	58°·3
August	59°·9	57°·7
Average of three warm months	59°·5	57°·1
COLD MONTHS.		
December	37°·9	39°·8
January	36°·8	36°·3
February	39°·0	39°·1
Average of three cold months	37°·9	38°·4

These comparative statistics, so far as they are reliable, do certainly afford countenance to Mr. M'Nab's contention for a diminished summer

* The month of July just past is, probably, an exception to this remark. This paper, it may be mentioned, was written some time since.

heat. There is a difference, it will be observed, of almost $2\frac{1}{2}$ degrees in the summer months, which is a tangible diminution, equivalent to the difference of mean annual temperature at Edinburgh and Great Malvern. In the winter months, again, the heightened temperature of the latter period shows itself almost entirely in December, the variation in which month in the two tables is over 2 degrees—a result entirely according with the general experience of many recent years. A few months ago Mr. M'Nab laid on the table of the Botanical Society an extraordinary collection of plants and flowers gathered in the Botanic Gardens on New Year's Day, and come to some measure of maturity long before their time. May not the fact, by the way, of these oft-recurring mild Decembers account somewhat for the deficiency of vigour later in the year, which is the foundation of his argument. The unseasonably high temperature hastens unduly vegetation of all kinds, which, nipped by the frosts of the spring months, does little more good for the season.—*Scotsman*.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Indoor Fruit Department.

VINES.—Lady Downes, Black Alicante, Barbarossa, Muscats, Syrians, and other Black and White late kinds, should now be on the eve of maturity; where the borders were liberally watered until the fruit began to colour, no more water will be needed at the root, otherwise, and where the Grapes have to hang until late in the season, or into next year, a good watering should be given at once to prevent ultimate shrivelling. The condition of the roots has as much to do with the perfect keeping of Grapes as a genial state of the atmosphere; where Grapes are not yet ripe, keep the temperature during the day from 85° to 90° with sun heat; shut up early in the afternoon, and do not let the temperature fall below 65° at night. Such as are ripe will do with 10° less by day and night, and the inside of the house in which they are grown should be kept dry, and should have a little air at top and bottom left on at all times; half an inch is sufficient, more dissipates the heat, and then cold air is admitted in voluminous currents. Pinch or cut away all growths which may have been formed beyond where the shoot was originally stopped, to allow a free circulation of bracing air about the wood and bunches. Do not use any of the thick-skinned sorts where thin-skinned ones, such as Hamburgs, Golden Champions, Muscadines, &c., are still to be had. The latter will not keep well if wet weather sets in, while the former will improve in flavour by hanging a considerable time after they are ripe. Clip out all decayed berries as soon as visible, for if even one is left, it soon affects and destroys numbers of others. Vines that have produced the midsummer supply will now be clear of their crops; their foliage should, therefore, be syringed thoroughly to dislodge red spider, &c., in order that the leaves may remain fresh to assist in ripening the wood. Now is a good time to put an addition to outside borders; where these are not fully made up, 2 feet of new soil should be added to them; the best fibry loam that can be got should be selected for that purpose. Numbers of different ingredients are not necessary at any time, but often hurtful. Add one bushel of ground bones to every two cart-loads of loam, and mix the whole well up together. In applying it, gently fork down the old soil, until roots are observed; then apply the new soil, and they will at once work into it, and be prepared for vigorous action when required next year. Pot-Vines will be fast ripening their wood. Do not give so much water at the root. Never let them get over dry, or they will cast their foliage prematurely, and not thoroughly ripen their wood. Those intended to furnish an early supply, and which have been grown in a high temperature, should be removed into a cool house, or outside altogether, that they may have the more perfect repose. Do not set them at the back of a north wall, or any such place; but let them be fully exposed to the sun, and a little sheltered from strong and cold winds at night.—*J. Muir, Clovenfords*.

Hardy Fruit.

Seldom or never have the roots of fruit trees been so dry as this season; and to this circumstance may be attributed, chiefly, the premature dropping of so many fruits. It is, however, not yet too late to water late Plums, Pears, Apples, and Peaches, and enough should be given to soak their root-runs through. Hardly will this have been done, when the fruits will be seen to enlarge in size and to grow in luscious juiciness. The fact is, in dry situations the fruits have been half-starved and parched up. They are waiting for the coming of autumnal rains to enable them to finish creditably; but, hitherto, they have waited in vain. Sewage will now do more good than clear water, provided the fruit is very late; but it is safest not

to give sewage within a fortnight of maturity. It is good practice, in such seasons as the present, to water the roots of the trees thoroughly, even after the fruit is gathered. Excessive dryness at the roots may seem to hasten maturity; but, if it does so, at all, it is brought about prematurely, and wood prematurely ripened can hardly yield good crops. Continue also to wash the trees on walls overhead daily with the garden engine; a clean top and sufficient moisture at the root are two of the best means of furnishing and finishing fruit-bearing wood. Autumnal waterings are likewise useful in destroying root fungi, which, if unchecked, work sad havoc among wall and other trees. Protect late Plums, Cherries, Pears, and Peaches, with tiffany, hexagon, or other wasp or fly-proof matting; also, trap these pests in bottles baited with sugar and water, and beer. Watch fruit that is ripening and gather it daily. Fruit is higher flavoured gathered a day or two before it is ripe, than when allowed to hang on the tree until it drops.—*D. T. Fish*.

The Flower Garden and Pleasure Grounds.

In favoured localities flower gardens will by this time be at their best; but in many others, perfection, as regards floral beauty, will hardly be realised this season. This, however, must not be allowed to interfere with such attentions as must necessarily be paid to routine operations, such as mowing, sweeping, removing dead and decaying flowers and leaves from the beds and borders, and by this means they will be rendered attractive and enjoyable for at least a month or more to come. The mixed or herbaceous border should now have careful attention, as Phloxes, Pentstemons, and many other late autumnal flowers, will now be in full beauty, and should not be in any degree marred or disfigured by being associated with the decaying flowers and foliage of other occupants of the border, nor should such plants be by any means cut down prematurely, or in an unripened condition; but, at the same time, all dead and decaying matter may be removed with advantage to them as well as to the general appearance of the garden. As regards annual plants, they should be at once removed as soon as their beauty is over, unless in cases where seed may be required, and this should be carefully picked as it becomes ripe. A border of herbaceous and Alpine plants and bulbs, whether situated upon the margins or belts of flowering and evergreen shrubs or otherwise, should be so arranged as to have the flowers peculiar to the different seasons so distributed throughout the entire length and breadth of the border that no portion of it will, at any season of the year, be entirely destitute of flowering plants; and care should also be taken to properly graduate the various species as regards their bulk and height, so that dwarf growing plants may not find themselves partially hid or overshadowed by taller growing sorts. Beds or clumps of double-flowered Zinnias are now in fine condition and are most valuable as autumnal flowering plants, and possess the power of resisting drought to a very considerable extent, especially if a deep, rich, and well-manured soil has been selected for them, and such encouragement they well deserve. They should be sown under glass, about the end of March or early in April, and should be planted out about the end of May. They may be planted tolerably close together, say about 6 or 8 inches apart, and all inferior sorts should be extracted from the bed or clump as soon as they show flower, and the space they occupied will soon be taken possession of by the remaining plants. Go carefully over the beds now and select a few of the very finest and most distinct blooms as seed-bearers, and mark them by securing to them pieces of coloured worsted or other material, and pick them as soon as they are ripe; and, by this means, the strain will be continually improved, while the reverse will sure to be the case if the seeds are gathered indiscriminately. Let Chrysanthemums, German and other Asters, as well as all other late-flowering plants, be carefully staked to prevent them being blown down or injured by high winds. Order, or get in readiness, the various bulbs which will soon be required for furnishing the flower-beds for spring. The cuttings of such plants as the Verbena, Petunia, Coleus, and Alternanthera, which may have been struck in close frames or pits, will now, in most instances, be well rooted, and the store pots or pans containing them should be placed on cinder ashes in the open air, fully exposed to the sun for some time, or as long as it can be done with safety, and this will have the effect of rendering them robust and hardy, and it is of the greatest importance to have them in this condition before the approach of winter; only care must be taken not to expose them too long.—*P. GRIEVE, Culford, Bury St. Edmunds*.

Roses.

As autumnal Roses will now be coming into flower, all who need a further supply of them will do well to visit some of our great Rose nurseries, and select, while they can, such sorts as please them best, some being fond of a full-cupped Rose, others of large flat kinds, and a few even like loose-petalled Roses. In selecting new varieties for planting out, it is best to buy the strongest and best plants, for

great disappointment is often caused through buying a small plant which, when planted out, looks very small; and, if a weak grower, sometimes dwindles away and dies. I always have the smallest plants potted and put into a cold pit or plunged among leaves in some warm corner out of doors, and plant out in March, if I cannot get plants strong enough to plant in November. The following are a few varieties which I noticed this week in full bloom, viz., *Devoniensis*, *Belle Lyonnaise*, *Gloire de Dijon*, *Safrano*, *Maréchal Niel*, *Celine Forestier*, *Lamarque*, *Ophirie*, *Souvenir de Malmaison*, *Rev. H. Dombain*, *Louise Odier*, *Anna Alexieff*, *Baronne Prévost*, *Beauty of Waltham*, *Boule de Neige*, *Charles Margottin*, *Jules Margottin*, *Duke of Edinburgh*, *Elizabeth Vigneron*, *Princess Mary of Cambridge*, *Madame Julie Duran*, *Auguste Mie*, *Prince Camille de Rohan*, and *Princess Louise Victoria*. At this time of the year we have little to do except to remove suckers and weeds and enjoy our second harvest of Roses.—H. G.

Indoor Plant Department.

In stoves reduce the shading to a minimum; but do not remove it altogether, for sometimes we get extremely bright weather even up to the end of this month, by which injury is often done through scorching, especially as it is necessary now to use much less moisture in the atmosphere, as well as to admit more air; both of which render the foliage more liable to scorch. The object of the cultivator in this matter ought to be to just shade sufficiently to prevent injury, but no more, not even for a single hour. This is a point the importance of which should be urged, as so much depends upon the manner in which stove-plants are treated in this respect, during this and the following month, with a view to their flowering freely the ensuing season. From *Allamandas*, *Clerodendrons*, and *Bougainvilleas*, gradually withhold water, allowing them to flag for a day or so before giving any, and then only give it in reduced quantities; by continuing this treatment the soil in the pots will gradually get to that (at this time of the year) necessary condition as to moisture, that it contains just sufficient moisture to maintain the roots in health, without inducing any disposition in the plants to form more wood. *Stephanotis* requires to be kept after this time comparatively dry; but, unlike the preceding plants, being evergreen, it will not answer if the soil gets too dry, as the leaves would suffer and drop off. *Dipladenias* should also be kept drier than when it is desirable to encourage active growth, yet not so dry even as the *Stephanotis*. *Ixoras*, again, must be kept at this season drier than when their growth is most active, but must never be allowed to get too dry, or they will suffer to an extent that will take the best part of a season to recover them. Nothing adds more to the good appearance of the stove than a few suspended baskets of such things as *Hoya bella* or the different varieties of *Æschynanthus*; of the latter, *Æ. splendens* and *Æ. Boschianus* are most desirable plants, of graceful drooping habit, brilliant and free-flowering; growing freely in an equal mixture of loam and peat, with sufficient sand to ensure porosity. Reduce the atmospheric moisture of the Fern house, and also the roof-shading, but this only in a comparative degree; Ferns having no wood to mature and solidify like flowering plants, neither require, nor will they bear this additional sunlight, and drier root treatment being carried so far as in the case of flowering plants, without suffering seriously. What they do require at this season is simply to carry this treatment so far as to check the disposition to make growth and rest the plants, so as to get them in that condition that they will move with vigour when the season of active growth comes round. The late-blooming *Azaleas* will now be setting their flower buds, and should be no more shaded. The syringe should also be withheld, simply throwing a moderate amount of water about the floors and paths, at, say, four o'clock, when the house should be closed, allowing the temperature to rise by sun-heat, which is at once the most genial to the plants and the most economical. Continue this practice until the flower-buds are up as large as small *Camellia* buds. If their inveterate enemy, the thrips, makes its appearance, give it no quarter; any delay in this matter entails a serious after expenditure of labour. Get all the plants, large and small, tied before they have quite completed their growth and the wood becomes hardened thoroughly, as after that they are too stiff to regain the natural position a' ter tying. Hard-wooded plants will still be out-of-doors to harden and mature their seasons's growth. See that they are well attended to with water, and syringe in the evenings all such as are not liable in the winter to the attacks of mildew. On the other hand, see that they do not get their soil too much drenched by heavy rains, otherwise irreparable injury will follow. Heaths should all be now fully exposed in the open air, except such as evince by the absence of free growth, that they are weak at the roots. If any such exist, it is better to keep them under cover, giving all the air possible night and day, and be careful not to let them get too wet at the roots. Heaths that become somewhat stagnant at the roots in the way

described may sometimes be brought round by careful treatment of the soil.

Kitchen Garden.

Mushroom beds should be made up in September for winter bearing. In most private gardens Mushrooms are usually grown for winter supply in houses or sheds built for the purpose, generally at the back of the forcing-houses, and such houses are exceedingly useful for forcing many other things besides Mushrooms. Rhubarb, Seakale, Chicory, &c., may be quickly and cleanly forced in a Mushroom-house without the labour and litter which usually accompany the forcing of these plants in the open air. Although I do not consider any private garden complete without a Mushroom-house, taking into consideration the many uses to which it can be put, I do not, of course, consider such a structure absolutely necessary for the successful culture of Mushrooms alone at any period of the year. With respect to Mushroom culture, however, whether it is carried on in sheds, cellars, or in the open air, it is necessary that a steady heat of 75° or 80° should be maintained in the beds, during the time when the spawn is running, but which may be allowed to fall to 60° or even 55° during the growth of the Mushrooms. In Mushroom houses properly constructed and heated there will be no difficulty in maintaining the requisite temperature, but open air beds in winter, sometimes, involve a good deal of trouble in covering to keep off heavy rains and maintain the necessary amount of heat in the beds, without which the spawn would perish. All this is, however, a question of skill and care on the part of the cultivator; and let me add also a question of means in the shape of plenty of fresh stable dung, to make the beds, and for coverings and linings to them afterwards, in bad weather. Years ago, it was considered necessary to shake out, as far as possible, all particles of straw, and to use only the droppings in the construction of the beds—a practice now proved by many cultivators to be unnecessary. I have seen better crops of Mushrooms grown with the dung fresh as it came from the stables, with only the longest and driest straw shaken from it, than when considerable pains have been taken to secure only the droppings, and a good deal of time lost in waiting for and watching its fermentation before it was considered safe to make up the bed. Whenever the dung is used fresh, however, or comparatively so, it is necessary that a certain proportion of fresh loamy soil, varying from a sixth to a tenth of its bulk, should be thoroughly mixed with it; and the beds should be built up in layers, and each layer well beaten or trodden down; and the more thoroughly this is done the less danger there will be from over-heating, and the longer and better will the beds bear. I am of opinion that, in many cases, where several weeks are occupied in fermenting the dung before it is used, a good deal of the nitrogen which it contains is drawn out of it in the process, and that the chances of a good crop are thereby rendered more uncertain. This is a good time to sow a few seeds of Brussels Sprouts and of the various kinds of Broccoli for next year's planting. Sow thinly, as the plants will remain in the seed-beds till the end of February, when they may be pricked out. I am convinced that one of the chief causes of such things as Broccoli suffering so much during severe winters is late sowing, and, as a consequence, late planting and late autumn growth, which must be soft and watery; and, therefore, a prey to the first severe frost. In autumn, before the earth has parted with its summer heat, seeds of all kinds vegetate freely; it is best to sow in a dry south border. Red Cabbage should also be sown now for next year's pickling; and, if desirable, a few seeds of other kinds of Cabbages may be sown to succeed the spring Cabbage. Spring-sown Onions should be pulled up and harvested previous to storing.—E. HOBDAY.

Cottagers' Gardens.

Advantage should now be taken of spare hours to thoroughly eradicate all weeds before the dark dull days of early winter have arrived. The most effectual remedy is to hoe the ground deeply several times in succession at short intervals, so as to bring the seeds to the surface, an operation which will also be beneficial to growing crops. Onions will now require harvesting, and when thoroughly dry should be stored in an open airy situation. The best crop to succeed Onions is Cabbage; as soon, therefore, as the ground is cleared, wheel on to it a good dressing of well-rotted manure, of which too much can scarcely be given, as Cabbages grown as they should be on highly manured ground, are very different from the stringy produce of poor land. Early Apples will require gathering, but on no account should valuable late keeping sorts be gathered before they come easily off the tree. In flower borders a few seeds of such pretty spring flowering plants as *Saponaria*, *Nemophylla*, *Silene*, &c., may be sown, and cuttings of *Geraniums* should be at once inserted either in boxes or pots to be protected through the winter. Collect seeds from annuals and such other plants as are usually increased in that manner.—J. G.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

SEPTEMBER 2ND.

DANLIAS, which formed the chief feature of this meeting, were unusually good, although somewhat limited as to numbers; and one or two of the stands of Gladioli shown were also above average excellence. There were one or two good collections of Apples and Pears; and vegetables, more especially Potatoes, were of splendid quality. Messrs. James Carter & Co. sent a good collection of culinary herbs and curled Kales; while Messrs. Veitch & Sons contributed a fine miscellaneous group of Orchids, Solanums, Ricinus, and other decorative plants, including specimens of the extremely curious orange-flowered *Blumenbachia* (*Cajophora*) *coronata*. It may be remarked that, as the generic name *Blumenbachia* had been previously applied to a section of the genus *Sorghum*, *Cajophora*, Hooker's name ought, therefore, to have preference, so as to avoid that confusion which is becoming intolerable to cultivators as well as to botanists.

Dahlias.—Of these, Mr. Keynes, of Salisbury, had a splendid stand of thirty-six varieties, among which were John McPherson, fine purple; Mrs. Eckford, blush white; Pauline, orange-red; Willie Eckford, rich crimson, purple centre; and Monarch, a deep velvety-purple; *Picotee* is a fine flower of a golden-yellow colour, with a reddish margin to the florets; Memorial, bright rosy-purple; Yellow Boy is one of the best of the golden-flowered section; and Flora Wyatt is a good red. Mr. Charles Turner staged a nice lot of well formed flowers, the following being especially worthy of note, Prince Arthur and Julia Davies, both fine yellows; James Service, crimson-maroon; King of Primroses, straw yellow; Mrs. Henshaw, white; W. P. Laird, lilac striped with purple; Princess, white; and Earl Radnor, crimson-purple.

Gladioli.—The season for these is, of course, on the wane, but several good stands were shown by Messrs. Kelway & Sons, and Lord Hawke, staged twelve excellent spikes in the amateur's class. Among the varieties staged by the different exhibitors, we noted the following as worthy of more than a passing notice:—Norma, white, purple stripe; Sparkler, a fine vivid scarlet; Mr. Tucker, white, rosy-purple stripe. Mr. J. Douglas, a well-known amateur grower of this noble flower, had a fine stand, a large proportion of them being seedlings of his own raising, and although the spikes were scarcely so large as those of Messrs. Kelway, they were especially remarkable for richness of colouring. One of the best in Mr. Douglas's lot was Horace Vernet, a glowing fiery scarlet, the colour being intensified by a pure white stripe.

Asters.—These are amongst the finest and most generally useful of all hardy annuals, and every year seems to improve them either in perfection of flower or habit. Messrs. Veitch & Sons staged a fine group of "Boltze's Dwarf Bouquet," a fine dwarf profuse flowering strain, well adapted for pot culture, the flowers being compact and of the most brilliant shades of rose, lilac, purple, and carmine. Messrs. Carter & Co. staged fine cut blooms of *Anemone*-flowered kinds, these being nearly as beautiful as the show varieties. The only collection of Asters in pots for competition came from Mr. R. Dean, Ealing, the plants being well bloomed, but too large and coarse in habit as pot plants. Mr. Lakin, of Chipping Norton, staged an excellent group of cut blooms in the class for French varieties; these flowers were of good size and well coloured, the leading shades being blue, purple, rose, lilac, and white. Mr. T. Benham staged an equally fine collection of Quilled or German Asters, which are as easily grown as the others, and quite different in form, thus affording an agreeable variety. Mr. Lakin also exhibited cut flowers of Zinnias, the colours being remarkably rich and brilliant, the prevailing shades are orange, yellow, crimson, and purple.

Miscellaneous.—Mr. W. Bull staged a well-grown group of *Croton* majesticum, the foliage being remarkably well coloured. As shown, it promises to be one of the finest of all for exhibition purposes. Mr. Barr sent a splendid group of Lilies (cut spikes), principally of the auratum, tigrinum, and speciosum types, some of the forms being very fine. A spike of *L. tigrinum* splendens was the finest hitherto exhibited—even better than the excellent representation recently given in the *Flora des Serres* (t. 803). Cut flowers of a fine double Sunflower, named *Helianthus fistulosus*, came from Mr. R. Tanton; but it proved to be the *H. californicus insignis* of Otto, and, in all probability, is only a double form of *H. annuus*. It is a fine showy plant, well worth culture. Messrs. E. G. Henderson & Sons sent a group of decorative plants consisting of white, rosy, and yellow-flowered *Neriums* and new *Sonerilas*, to which we alluded at the time when certificates were awarded them, and also two or three rare *Selaginellas* and other plants. Mr. Parker, of Tooting, sent fruiting plants of the curious *Epigynum leucobotrys*, having bright green leaves and clusters of berry-like fruit of ivory whiteness, marked with black in a very distinct and striking manner.

Fruit and Vegetables.—These formed an interesting addition to the show. Early dessert Apples were fairly represented, the fruit being of excellent quality and flavour. Mrs. Benham had a nice dish of fruit named Duchess, and Mr. T. Benham had a handsome dish of Red Astrachan, fresh as when gathered, and covered with a delicate bloom. This is one of the prettiest of all dessert Apples, and is worth culture for its distinct and novel colour, and fine appearance on the table. Pears were in most cases excellent, and like the Apples, were partially judged by flavour, the prizes going in nearly every case to Williams's Bon Chrétien, undoubtedly one of the most delicious of all Pears at this season. Those sent by Mr. B. Porter, and Mr. Moorman, were very fine. Mr. Dancer sent fine specimens of *Souvenir du Congrès* Pear, which in colour and flavour somewhat resembles the last-named, but the fruit is larger, and curiously

flattened at the apex. It is said to ripen well on the tree, whereas Williams's Bon Chrétien requires to be gathered before it is ripe, in order to fully mature its delicate flavour. Mr. Groom, of Henham Hall Gardens, sent another specimen of his new African Melon, which the committee thought most excellent in point of flavour, but considered it to be too large. We can only repeat our previous statement, that it is the finest-flavoured Melon we have hitherto tasted, as well as one of the noblest in appearance. Fine Cucumbers came from Mr. Bloxham, but were not considered any improvement on existing kinds. Mr. Bennet, of Hatfield, sent specimens of Lord Palmerston Peach, and excellent fruit of Keye's Early Prolific Tomatoes. Mr. G. Pragnell sent a fine basket, well filled with various vegetables, usually known as *Salads*. These consisted of Mustard, Cress, Endive, Lettuce, Chickory, Cucumbers (Rollisson's Telegraph, true), Water-Cress, and Radishes, the whole being neatly arranged. The same grower also sent remarkably fine specimens of the Giant Rocca Onion, some of which were nearly 8 inches in diameter. The collections of vegetables were of excellent quality, especially those sent by the last-named exhibitor, who had White Spanish Onions, very fine; Potatoes, Brussels Sprouts, Peas, Artichokes, Carrots, and French Beans. Mr. Bloxham had fine specimens of Smith's Frame Cucumber, which is a fine, fresh-looking variety, said to be more prolific than the Duke of Edinburgh, which it somewhat resembles. The Leeks in this collection were of especially fine quality. Mr. G. T. Miles had a fine group of produce, but slightly inferior to the last.

Potatoes.—There was an excellent display of fine tubers from some of the principal nurserymen and growers, and it is surprising to see the improvement effected during the last few years in producing smooth, fine skinned, shallow eyed varieties, retaining a fine flour-like appearance when cooked, the best quality in a good Potato. The best kinds now in cultivation were exhibited in excellent condition as a rule, although in one or two cases the disease was but too evident. The twenty dishes sent by Mr. R. Dean were really excellent in every way, and deservedly obtained the premier award. Mr. Ross, Mr. G. T. Miles, Messrs. Carter & Co., Mr. Pragnell, and Mr. Osman, also had good collections. Among the best sorts shown were the following, Model, Early Coldstream, Early Market (one of the very best), Bountiful, Fillbasket, Early Goodrich, Red Emperor, Snowflake, Myatt's Prolific, Mona's Pride, Dalmahoy, Red Regent, and Oxford Kidney.

First-class Certificates were awarded to the following new plants:—*Nerium* New Red (E. G. Henderson).—A fine free-flowering single form of the old *N. splendens*, compact in habit, and well adapted for a greenhouse decorative plant.

Dahlia John McPherson (Keynes).—This is a finely-formed flower, of good size and of a rich violet-purple colour. It is a good exhibition flower.

Dahlia Countess of Pembroke (Keynes).—A large finely-formed flower of a delicate yellow colour, the central florets being tipped with violet-purple.

Odonoglossum maxillare (Shields).—A very striking species, the flowers being of pearly whiteness, with the exception of a soft yellow stain on the crest of the lip, and a large velvety blotch of dark brown at the base of each segment. It is dwarf in habit, and a decided acquisition to a beautiful group.

Zeocleodes guineensis (Bull).—A distinct and handsome terrestrial Orchid, bearing tall spikes of showy flowers. The sepals and petals are brownish-purple, the chief beauty of the flower being in its large flat rosy-purple or lilac coloured lip. It is of easy culture and worth a place in every collection.

Solanum Quitense (Veitch).—A strikingly handsome plant of the large-leaved section. The leaves are fully 2 feet in length and nearly as broad, of a vivid velvety green with conspicuous hairy purple-tinted veins. As a sub-tropical or conservatory plant it will be very valuable.

Hybrid Begonia Model (Veitch).—This is a strong-growing profuse-blooming plant, well worth culture either as a decorative pot plant or for cut flowers. The individual flowers are very large, of a vivid rose colour, borne in axillary cluster on long pedicels.

Selaginella lepidophylla (E. G. Henderson).—This plant is sometimes known as the "Re-urrection plant," and is well worth culture as a decorative plant. Its fronds are flat and of a vivid green, freely produced in a rosulate manner.

Gladiolus Duchess of Edinburgh (Kelway).—A nice addition to new varieties, bearing a fine spike of large rosy flowers, having a white purple-striped centre. *Gladiolus* James Kelway (Kelway).—This is a glowing scarlet variety with a white stripe, and an excellent kind for exhibition purposes.

Botanical Certificates were awarded to the following:—

Drosera glanduligera (Bul).—In habit this interesting plant closely resembles a large-growing form of *D. rotundifolia*. It is a native of Australia, and is undoubtedly the same as D. Whitakerii, figured in the current number of the *Botanical Magazine*. The flowers are solitary, as large as a silver sixpence, and of a pure white colour. Neat in habit and a profuse flowerer, it deserves a place in every collection.

Drosera Menziesii (Bull).—This is an extremely slender-growing caulescent species, from Australia, good specimens being fully a foot high. It merits a place in gardens devoted to vegetable curiosities.

Whiskey from Moss.—The Department of Agriculture at Washington has received a communication from Mr. C. C. Andrews, representative of the United States at Stockholm, representing the production of whiskey, in Sweden, from Lichen or Reindeer Moss. The manufacture was begun in 1863, by a process invented by a Swedish chemist, Professor Stenberg. For six years the quantities of Moss used, and of whiskey—50 per cent. alcohol—produced, were as follows:—

Year.	Moss, lbs.	Whiskey, Imp. Gal.	Year.	Moss, lbs.	Whiskey, Imp. Gal.
1868	3,315,928	163,008	1871	1,720,141	84,672
1869	6,001,470	294,912	1872	2,149,051	105,498
1870	3,565,344	175,104	1873	704,793	34,560

Mr. Andrews states that the falling off in production is owing partly to the abundance of other materials for whiskey, such as Potatoes and grain, and partly to the increasing difficulty of procuring the Moss.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ROSES OF 1874.

By S. REYNOLDS HOLE.

(Continued from p. 213.)

It may be expected that writing in Ireland, I should say something of Irish gardens; but Nature has made in the scenes which I have visited, such a grand exposition of beauty, that Art seems to hide herself, fearing comparison, and I have had no time to go in search of her. Very rarely do we see here, as in England, the fruitful little orchard and gay garden plot, surrounding the cottage home, but in their place, the invariable patch of Potatoes, that supercilious potentate, the pig, roaming where he pleases, indoors and out, and the grey geese, with feathers inserted in the upper beak, to stay their incursions upon the adjoining Oats. Some benevolent landlords, such as Lord Kenmare and Mr. Herbert, in the neighbourhood of Killarney, are improving the dwellings of the poorer classes, and making them bright and cheerful with a garden; but, as a rule, you seldom see any but wild flowers (the exception being here and there a bush of Fuchsia or Hydrangea) about the homes of the peasantry. Again, it must be remembered that the localities through which we tourists travel (mountainous for the most part) are unfavourable for horticulture, both as to site and soil; and also that such residences as would require a garden, and such residents as would desire and could afford elaborate floriculture, are (unhappily for Ireland) few and far between. I have seen, in consequence, only two gardens upon my line of march, but these have been well worthy of inspection, and welcome refreshments to an exiled florist. Walking from Letterfrack to Kylemore, to see the lake, wherein, sixteen years ago, my beloved friend and companion, John Leech, caught the salmon and enjoyed the triumph, which he has drawn so admirably in our "Little Tour in Ireland," I was astonished and delighted to find, where, at my former visit, were only mountains above and a bog below, a spacious and attractive mansion, built in castellated form of a very beautiful stone, with extensive gardens and greenhouses not far distant, and shrubberies and cultivated fields around, the property of Mr. Mitchell Henry, M.P. for Galway. Hearing that Mr. Henry was not only a generous benefactor to those around him, but kindly disposed to strangers also, I ventured within the handsome gateway of his garden, and soon received from his chief gardener, Mr. Garnier, that hearty welcome which all true brothers of the spade rejoice to give and to accept. It is wonderful to see how much skill and perseverance, encouraged and sustained by the good taste and liberality of a wealthy master, have effected at this Castle of Kylemore, and especially in its garden. When we consider the situation, not only exposed to the perpetual humidity of this rainy clime, but to the sweeping storms from the Atlantic, which leave their mark, saline and briny, upon the foliage of the plants; the soil, chiefly peat and gravel, so light, loose, and wanting in tenacity, that the walls of the garden in one part have their foundations more than 20 feet below the surface; and, added to these, the difficulty of inducing Irishmen to finish any hard or large undertakings ("shure, your rivrence," said one of them, "ther's so little work to be found in the country, 'twould be wicked not to make the most of it"); when we reflect upon these obstacles, and then look upon the bright beds and green sward without, and the fruitful Vines, and Pine-apples, and Peaches, and flowering plants within, the desire comes upon us to see a statue of Mr. Henry, like that of Lord Shrewsbury at Alton Towers, placed somewhere between those magnificent beds of roseate Sedum, and bearing the same inscription—"He made the desert smile." Cowan's lime-kiln system is here most successfully applied to some 9,000 feet of piping; the whole range of houses is admirably supplied with water; indeed, all the arrangements (specially the forcing of early fruit) are those of a master mind.

I was indebted to an incident, which in England we should consider remarkable, but which, among our more excitable

neighbours, may not be regarded as abnormal, for a brief visit to another Irish garden which pleased me greatly. To vary our route, as we returned from Connemara, we proposed to travel from Cong, down Lough Corrib, to Galway; but, when we arrived at the former place, we were told, to our dismay, that there had been "just a taste of a scrimmage" between the captain and the engineer of the steamer, and that, consequently, the vessel in question was lying motionless in Galway harbour. So we went to see the celebrated caverns, and, being a giant, I became so convex in Cong Cave, and so suffocated from the smoke of the straw torches, by which it was illuminated, that I was heartily glad when the sight was over, and we went "bedward ruminating." Next morning, we dispatched a message of inquiry to Galway, or rather to the post office at Cong, for it got no further, but was returned to us in a couple of hours with the compliments of the authorities and the pleasing information that the wires (emulating the steamer) declined to work that morning. Our only escape from this dilemma was to hire a couple of cars; and, as these would not be ready for an hour or so, I took the opportunity of visiting the park and gardens, just outside the village, belonging to Sir Arthur Guinness. More picturesque grounds it is difficult to imagine, beautifully timbered, intersected with rivers of waters, which flow by the ruins of Cong Abbey into Lough Corrib, at the head of which, and commanding lovely views, is the house, spacious already, but in process of extensive enlargement. How did I know, before I saw the gardens or the houses, that both would be as they should be? Because the gardener, Mr. Ellis, came to me with his coat off, "his brow was wet with honest sweat," and there was nothing of the cockscorn about him, except some excellent specimens of the plant which bears that name, and which were large enough and velvety enough to have made easy chairs for some fairy nobleman at his club. Therefore I found, as I anticipated, healthfulness and cleanliness, both in greenhouse and stove (for it is indolence which brings dirt, and it is dirt which brings, in the form of animalculæ, "a plague on both your houses"); and, in the garden, some 20,000 bedding-out plants, well-grown and tastefully arranged—the colours artistically blended, with an ample intermixture of ornamental foliage. It is known that we, who write for *THE GARDEN*, are not much enamoured of gaudy horticulture. We think that flora looks best in simple garb; and, when we see her in yellow satin and rouge, we move aside as from some object whereupon is written, "Take care of the paint." But I, for one, have ever maintained, notwithstanding, that bedding-out, skilfully handled, and applied as an adjunct, not as a monopoly, may add much beauty to a garden; and it is thus successfully introduced in the pleasant grounds of Cong. You walk between two bright lines of flowers (and this walk, Mr. Ellis informed me, is to extend next summer for a quarter of a mile), but your eyes are not dazzled or wearied, partly because the combinations and contrasts (I have especial remembrance of the blue-grey *Ageratum* in conjunction with one of the pink *Geraniums*) are so aptly arranged, but chiefly because there are ample margins and diversified views around. These glowing beds are but as the ornamental jewels, the necklaces and bracelets, of some winsome maiden, which enhance, but never vie with, her beauty. I would as soon live in Madame Tussaud's collection of waxwork, or, like Mrs. Crumles, in the final tableau of the drama, standing upon her head and surrounded by blazing fireworks, as be constrained to dwell in certain gardens which I have seen exclusively absorbed by "bedding out." The first sight, I admit, is a surprise and an enjoyment, but when you have been twice round, and there is nothing else to see, and nowhere else to go, I must say that I am influenced by a great desire to copy the conduct of a small dog, whom a peacock of my acquaintance followed persistently, displaying, whenever the dog would look at it, his gorgeous tail—he barked sarcastically on the thirteenth exhibition, barked, and ran away! Not so with these gardens of Cong, for their beauty is never obtrusive; but we must leave them in a hurry, or we shall never get to Galway in time for the train to Limerick; and, moreover, it may be as well to remember that in this article upon Roses we have not (*more Hibernico*) said a word about them.

(To be continued.)

NOTES OF THE WEEK.

— We have received specimens of the Japan Nerino from Dr. Wallace of Colchester; it grows in sandy places by the waysides near Yokohama, flowering in October, and sending up its leaves in early spring. The trusses of bloom on native plants are about 6 inches in diameter, and the flowers of a deep red. It is likely to prove a useful addition to our garden flowers.

— A NEW winter-garden and aquarium are to be opened at Southport on the 16th inst. Their cost is stated to have been £100,000. The heating apparatus for this new place of public resort has been supplied and fitted up by Messenger, of Loughborough.

— MR. WILLS, the deservedly popular floral decorator, has now taken a third nursery, this time in the Fulham Fields, at Lewis Place. This will be devoted to Palms and cool Orchids indoors, and to Roses out-of-doors. We recently saw in his Annerley establishment a fine plant of *Jasminum grandiflorum*, planted out and trained up the roof of one of the plant houses. So treated it grows freely and bears a profusion of white star-shaped sweetly-perfumed flowers, which are found most valuable for bouquets or "button holes."

— THE Pine forests on both sides of the boundary dividing the provinces of Nyland and Tavastehus, in Finland, appear to have been suddenly desolated by the ravages of a great caterpillar. The *Helsingfors Dagblad* describes this plague in minute terms, which leave no doubt that the insect is the larva of a hawk-moth, in all probability *Spinx Pinastri*. More than 6,000 acres of forest have been entirely destroyed, the larvæ stripping off leaves and bark, and leaving nothing but this year's shoot.

— A MOVEMENT is on foot to get the gardens at Kew opened earlier than one o'clock on week days, an hour inconvenient for the public generally. Large numbers of excursionists who come from a distance are disappointed at finding the gardens not opened till the afternoon. Many of these are poor people, who only obtain a holiday once or twice a year; but this is not the only class that suffers, for many other persons would visit the gardens if they could obtain admission at an earlier hour. Were they opened earlier than at present the public would, doubtless, appreciate the concession.

— At a recent séance of the Paris Academy no fewer than eleven communications were received relating to the destruction of *Phylloxera*. A letter from a Vineyard proprietor proposed sowing Tobacco-seed among the Vines; he had found this an effectual remedy, in the case of Artichokes, for destroying an aphid which attacked the roots. Hemp and *Datura Stramonium* were proposed as preferable to Tobacco, on account of fiscal restrictions on the latter. One suggestion was to destroy the insect by electrical discharges. A committee of the Linnæan Society of Bordeaux have pronounced, as the result of their researches, that the *Phylloxera* is not the cause of the disease, but an effect of an organic malady attributable to five causes, which they specify, viz., exhaustion of soil, inclement seasons, bad choice of stocks, and bad treatment, &c. They state that while *Phylloxera* is an effect, it may aid in deteriorating the Vine.

— THE pretty and curious little *Gnaphalium Leontopodium* is frequently the cause of newspaper paragraphs like the following:—"The Alpine Edelweiss, to obtain which botanical explorers are always prepared to encounter dangers and difficulties, has lured many to their death. The other day a Mrs. Lockhart ascended the Rosegg glacier in search of it, lost her footing, fell from rock to rock, a distance of 60 feet, and was finally found in a state of exhaustion and seriously injured. It is hoped she will recover, to remember, without over-much pain, her search after the Edelweiss." There is no occasion for botanical explorers "to encounter dangers" in seeking for the plant, as we have walked over many miles of mountain meadow with the Edelweiss always within sight, and to be gathered as easily as any other Alpine flower. It is, of course, necessary to ascend to a certain elevation to get the plant, but so it is in the case of scores of others, many of which are much more difficult to obtain than this.

— THE exhibition of insects in the Tuileries Gardens is now open. It is divided into two great classes, the useful on one side and those which are injurious on the other. The bee and the silkworm have, of course, prominent places, as also has the spider. Crickets; beetles, and other familiar insects, which we treat as enemies, are placed among the auxiliaries. The direct and indirect utility of the ant is lectured upon by an aged *savant*, who has spent his life in studying the ways of insects in the woods and Vineyards of the Jura. The *Phylloxera* is an object of peculiar interest to Parisians, because of the rise it has caused in the price of wines produced on the alluvial soils, where it most multiplies. Each insect is pinned to a card, stating briefly its natural enemies, habits, appetites, capacities of increase, uses (direct and indirect), or the ravages it commits in

accomplishing its destiny. In an annexe there is a collection of insectivorous birds, each bird having round its neck the bill of fare which its palate and necessities dictate.

— DR. SCHWEINFURTH is busily employed in the arrangement of the magnificent collection of the flora of Africa which he made during those travels which have excited so great an interest throughout the civilised world. We are not, however, as yet, aware of the value of his discoveries from a gardening point of view.

— WE understand that the entire stock of the new *Colens* Duchess of Edinburgh, raised by Mr. Chitty, of Stamford Hill, has passed into the hands of Messrs. James Carter & Co., of High Holborn. It is of compact habit, the leaves being of a rich crimson or carmine-purple, margined with clear golden yellow. It is figured in the current number of the *Floral Magazine*.

— DR. WALLACE sends us specimens of *Milla biflora* (which is in flower in the open air in his garden at Colchester), a most valuable autumn-flowering bulb, producing flowers which are of a clear paper-white inside, the outer side of the division having a clear band of green running up the centre of each, which gives the flowers quite a distinct appearance. It is sweet scented.

— MR. DISRAELI (says a daily contemporary) is fond of, or affects a fondness for, gardening. Perhaps nothing could be more characteristic of the two rival leaders than the circumstance that some two or three years ago, while Mr. Gladstone's "passionately earnest" nature found a congenial relief in felling trees on his Hawarden estate, Mr. Disraeli was, like a second Bacon—*vide* the immortal essay "On Gardens"—cultivating his Roses at Hughenden.

— THE much-talked-of Colorado Potato beetle has at last made its appearance in the suburbs of New York city. At present, however, the insect is found only in comparatively small numbers, a few of the yellow grubs perhaps being scattered here and there in a field, or clustered on a Potato hill or two in some corner, but there is enough to furnish an abundant brood next spring, because nearly all those which came to maturity this fall are going to burrow in the ground and be ready to multiply their kind next spring. We trust none of them may take passage, by one of the quick steamers, to this country.

— It is stated by the *Graphic* that Trafalgar Square is about to be beautified by the Duke of Northumberland, who intends to spend some of the purchase-money of Northumberland House in making a garden of it. A bed of dwarf evergreens will surround the Landseer lions, and the dismal stone flags will give place to neat gravel walks and parterres of flowers. We trust the Duke may not be misled into planting many evergreens in this position. What is most wanted are some good deciduous trees that will do well and improve from year to year. These need not exclude a graceful arrangement for flowers or such evergreens as are really suited for the position.

— WE never remember to have seen Covent Garden Market better supplied with fruit than at present. Some fine Pines have just arrived from St. Michael's in excellent condition. Grapes are imported in large quantities from Lisbon, and also from Jersey. These are of good quality, and realise, on an average, sixpence a pound. Figs from Worthing and the Channel Islands (Guernsey) are plentiful. English Melons are now in season, and large quantities of Melons also come from Spain (Denia and Cadiz). Apples, Pears, and Plums, of home growth, are excellent in every way. Bananas and Prickly Pears are now arriving in quantity, and there seems a plentiful supply of Filberts, Cob-nuts, and Walnuts.

— THOSE who are interested in decorating public buildings with living plants should not fail to inspect Messrs. Dick Radclyffe's pretty arrangements, now to be seen in the concert promenade of Covent Garden Theatre. They consist of rock-work made with tufa half hid among Ferns, Palms, Cyperus, and similar plants, that over-hang pools of running water. For such pretty devices, crowded gas-heated saloons are not the best of places; hence some ingenuity and tact are necessary in order to preserve the plants used in a healthy condition as long as possible, and in this somewhat difficult art Messrs. Radclyffe have succeeded admirably, as the examples just alluded to amply prove.

— WE have received a splendid spike of the Zebra-striped *Oncid* (*O. zebrinum*) from Sir William Marriott's collection at Down House, Blandford, Dorset. Its total length was 12 feet, numerous branched. The individual flowers measure about an inch and a half across, the sepals and petals being undulate or heavy, and white in colour, marked with purple blotches and bars. The dagger-shaped lip has a large corrugated crest of a bright yellow colour, and the habit of the plant is nearly identical with that of the Peruvian *O. macranthum*. The plant flowered in the Manley Hall collection about two years ago, but neither flowers nor flower-spike were so fine as in the present instance. Mr. Hill, who has grown the plant, kindly informs us that it luxuriates in a cool *Odontoglossum*-house facing the north, and that it likes an abundant supply of moisture.

LADDERS FOR PICKING FRUIT.

LADDERS are absolutely essential to careful hand-picking, unless it be from dwarf trees. The more convenient the ladder, the easier and more expeditious the gathering. An important requisite is to use ladders in such a manner as not to cause any bruising to the branches. For moderate heights, step-ladders are best, and most easily carried. A simple and convenient one is shown in fig. 1. It is a three-legged stool, about $2\frac{1}{2}$ feet high, with stout spreading legs, inserted into a piece of tough plank at the top, with connecting rounds on one side, set so that one can easily step up on the plank. The legs should be slightly longer than a common chair post. The advantages of this simple ladder-stand are, it can always be

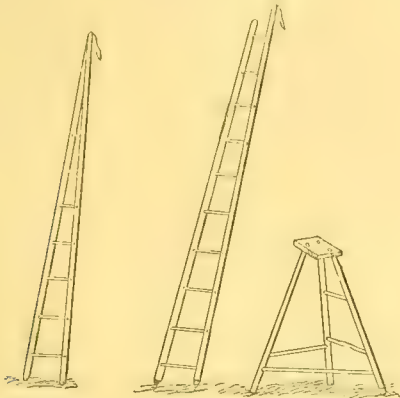


Fig. 3. Pointed Hooked Ladder. Fig. 2. Long Hooked Ladder. Fig. 1. Short Standing Ladder.

easily carried in one hand, is always ready for use, stands firmly, and enables the picker to reach branches which are a short distance overhead. When the fruit is higher, the common short simple ladder answers well (the length varying from 7 to 15 feet), provided certain modifications are secured for holding it firmly in the tree, and to prevent bruising. A common ladder does not always stand firmly, and is liable to slide to one side or the other, to the peril of the picker and the danger of bruising the bark. To guard against these difficulties, let one of the bars extend beyond the other (by cutting the end of the other off, if the ladder is already made), and add to it a broad wooden projection or hook (fig. 2). This hook is screwed firmly on the bar, and to prevent bruising, should be



Fig. 4—Standing Ladder.

padded beneath. By resting this in the fork, between two smaller branches, the ladder will stand perfectly secure. A modification of this ladder is shown in fig. 3, and consists of bringing the two bars together at the top, with the hook attached to both. Being thus in the centre it rests more firmly, and the wedge-form of its point allows it to be thrust freely into any part of the tree.

Standing ladders, of larger size than the one shown in fig. 1, may be constructed after the form in fig. 4. It is simple, and, if properly made, is light and portable. It may be 6 or 8 feet high; the higher, the wider should be the spread of the legs at the bottom. To prevent the rounds from being weakened by this breadth, a few of the longer and lower ones are made to pass through a central stiffening bar, so that one will possess

the strength of the three. The simplest mode for hanging the legs at the upper end is to bore holes through them near to the top, and pass the upper round through these holes; or, iron hoops may be screwed on the upper ends of the legs so as to pass about the upper round. When not in use, the legs are readily folded against the ladder, and it is easily carried from place to place, or placed snugly under shelter.

A common ladder, when not over 12 feet long, may be easily made into a standing one, by means of the contrivance exhi-

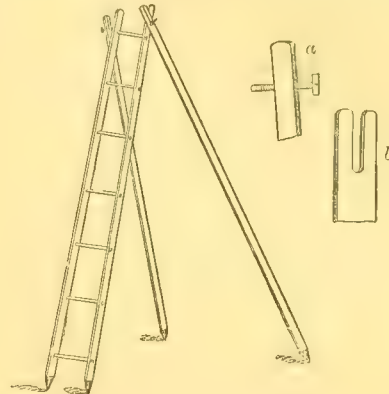


Fig. 5—Long Standing Ladder.

bited by fig. 5. Two supporting legs are attached to the outside bars at the top by means of screws, the form of which is shown at *a*. The legs have an opening or slot (*b*) to receive these screws. The ladder is raised, and the legs are at once

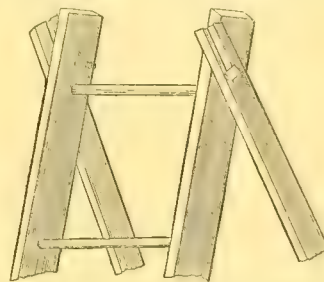


Fig. 6—Common Ladder changed to a Standing one.

placed under, against the screws, where they remain securely till the ladder is moved.

Fig. 6 shows the upper end of the ladder more distinctly at the place where the legs are attached. The screws should

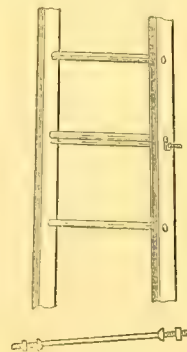


Fig. 7—Tie Rods.

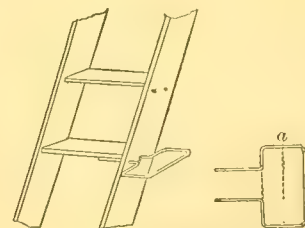


Fig. 8—Fruit Ladder.

be set a little obliquely, so that the legs may spread. A blacksmith will make them at a small cost. All ladders like this should be shod with iron or steel at the bottom, to prevent slipping. Slender ladders often get out of order by the legs or bars springing in the middle. To prevent this springing, the occasional insertion of tie-rods answers perfectly. Take a piece of half-inch round iron rod, make a head

at one end, and a small shoulder at the other, with a screw and nut outside, and when the ladder is put together, insert the ties. Fig. 7 shows one of these ties separately, and another inserted in the ladder just below the round.

Fig. 8 represents a contrivance for supporting the fruit basket while the picker is filling it. It is made of rod-iron, half an inch in diameter, bent, when red hot, into the form shown at *a*. This, when inserted into the two holes, bored with a half inch augur just below each step, forms the support. Smaller rods may be used if cross pieces at the dotted lines are welded on. The more common way of supporting the basket (so as to leave both hands free to the picker), is by simply attaching a small wooden or iron hook (fig. 9). The wooden hook is made of a forked branch of a tree, tied to the handle of the basket; the iron hook of bent rod. Any carpenter may make any of these ladders; or the cultivator who has a workshop may readily make most of them for himself on rainy days.



Fig. 9.—Hook for Basket.

THE DESTRUCTION OF THE VINEYARDS OF FRANCE.

ACCORDING to the Paris correspondent of the *Daily News*, the Vine pest, *Phylloxera vastatrix*, is decidedly the lion of the dull season. "Have you seen the *Phylloxera*?" the *quidnunc* asks you on the boulevards. Talk to a householder about the Prussian corvettes in the Bay of Biscay, and he will tell you that the *Phylloxera* interests him more. The wine merchant has raised the prices of ordinary wines, on the plea of the devastation caused by the *Phylloxera*. If you ask for the coarse cordial wines of the Rhone, the Gard, or the Durance, you are told you can have a few bottles as a curiosity. At the few dinners I have lately gone to, the *Phylloxera* was the burden of the conversation. Each day, at the Insect Exhibition, there is a long line of householders and housekeepers before the glass case where the Vine-destroying insect is on show. A *savant*, with a microscope, explains its habits and history. You hear the sightseers sing out in chorus, "The brigand!" "The monster!" "The frightful glutton!" And a frightful glutton it is. Its appetite and devastating mission are indicated in its structure. Even seen through a magnifying glass, the head is scarcely perceptible. The belly is ponderous and loosely attached; the legs are thin, short, and rickety; the body shaped like a viper's head, or the coffin of a short and very stout person; the nose is armed with a long probe and cupping apparatus, with which the insect pierces the bark of the Vine, and absorbs the sap which should nourish the plant. The wings are attenuated, but the *Phylloxera vastatrix* being easily transported by the wind, does not suffer from insufficient means of locomotion. Its ashy colour enables it to pass unperceived by the husbandman, who, unless he looks close to the stems of his Vines, would take the plunderers congregated on them for a coat of dust. In connection with the present Exhibition an eminent entomologist, M. Duclaux, Professor of Chemistry to the Clermont Faculty of Sciences, has drawn up a series of maps showing the progress of the *Phylloxera* invasion. The enemy was first noticed in France in 1865 on the plateau of Pujant, not far from the Pont de Gard. The invaded district is marked in the first map of the series with a red point not bigger than the eye of a fine needle. Somebody who had travelled in America warned the cultivator, on whose Vines he saw the invader, to lose no time in setting fire to the plants attacked. But the warning was disregarded, as coming from a man who notoriously had a hobby for small birds. "Our Vines won't be any the worse for it next year," was the answer of the too confident husbandman. In 1866 the enemy had spread north, south, and east across the plateau, which is marked in the second map with a big red spot, the shape of a hatchment. The northern point of the crimson stain touches the village of Roque Maure, the southern Villeneuve, and the eastern, the Rhone. There is also an eruption of pimples, which are thickest near Carpentras, Tarascon, and Arles. In 1867 these pimples became a broad stain. We notice in the third map two great centres of disease. The first, a long quadrilateral, traverses diagonally the Rhone, embracing the plain of Orange, the environs of Avignon, that broad flat called Le Plan-de-Dieu, and the alluvial land round Sorgues. The second is an oval patch, covering the fertile portion of the Crau. In 1868 there was a union of these centres. The invader marched by Cavallon and fat Perthuis, up the Durance Valley, sending out detachments to right and left. Two columns descended to the Mediterranean, attack-

ing the goodly Vines about Toulon, where, before the *Phylloxera* appeared, a bottle of wholesome strengthening wine could be bought for a couple of sous. A third column struck in a zig-zag direction across the Vaucluse. The northern boundary of the invaded country in 1868 passed from Paurclatte to Grignau de Sevigae celebrity in the department of the Drôme. In 1869, the fourth year of the insect war, the red stain had extended to the foot of the Ventoux and the Vaucluse chain, which have barred the way farther east on the *Phylloxera*. But the Luberon and Alpines were not a serious impediment to the invader, which turned them in a few weeks. In 1870 there was a halt. This was in the beginning, a phenomenally dry and hot year, and, from the end of October, exceptionally cold. In 1871, the enemy, as if refreshed by the halt, advanced with greater speed than ever. He pushed north of Valence, smiting Château Neuf du Pape, and other celebrated Vineyards. This year (1871) the ravaged country appears in the form of a triangular stain, of which the base crosses from Montpellier to Frejus, and the apex is marked at Tain. A perpendicular line falling from this point to the Mediterranean would cover 200 kilometres of wine-producing country. Hitherto the march of the *Phylloxera* has been north, south, and east. In 1872 the enemy sent a detachment across the department of the Herault, carrying all before him. By this time 1,100,000 hectares of rich Vineyards were devastated. In 1873 the triangle lengthened to Vienne. The Gers, the Garonne valley up to Agen, the Rhone valley as far as Lyons, and the part of Burgundy between that town and Macon were covered with a red eruption, which has not yet spread into stains. The *Phylloxera* chiefly encamps in plains and valleys. It does not like high ground, and never crosses mountains, which, however, it skillfully turns. Clayey soils lend themselves to the progress of the terrible insect. M. Duclaux does not endorse the comforting assurance published in some agricultural prints, that the *Phylloxera* can be destroyed by irrigating the plains where it encamps. For the present, nothing better has been hit upon than to root up the attacked Vines and burn them, thus destroying the germs of the insect. The natural remedy, small birds, can only be obtained with patience, and it remains to be seen what particular bird is the born foe of the Vine-destroying insect. M. Duclaux's maps have been drawn up at the request of the Academy of Sciences, which has devoted two sittings to an examination of them. M. Lichtenstein, a French entomologist, who for six years has been investigating the habits of the *Phylloxera*, has addressed a letter to the Minister of Agriculture and Commerce, in which he shows how the ravages of this insect may be checked. During the present month the *Phylloxera* is winged, and repairs in enormous numbers to the trees which border the Vineyards, where it deposits an egg, or rather a chrysalis, whence a perfect insect emerges. The insect immediately breeds, but he has not yet ascertained how the offspring reaches the Vines. He recommends the Vine-grower to singe the tree—a kind of Oak, of no value—on which the *Phylloxera* has settled, and thus destroy millions of insects.

A NEW KIND OF TOWN GARDEN.

At Stamford Hill an interesting example of the "flat" system of building houses, to meet the requirements of middle class people, has been built by Mr. Allen. The usual foolish arrangement of narrow slips of gardens surrounded by fences has been done away with for a much better one, which we find thus described in the *Scotsman*:—"The most novel feature of the plan is the garden. To houses of this class in the suburbs of London is usually attached a narrow strip of garden ground, either walled-in or separated from its neighbours by rows of ugly black pailings perfectly useless for the purpose of privacy, seeing that the enclosed space is overlooked by the windows of the whole row. Mr. Allen has done away with all this useless lumber, and has thrown the grounds of the houses into one. Still, each house has its own little lawn on which the children can play at special games, or the young people at croquet. These lawns are divided by walks and flower borders, and opposite the houses, which are built in line and open to a pretty bit of wooded country, rises a miniature Crystal Palace in the shape of a long row of greenhouses, built with great taste and elegance. In the centre of these is a square building of two storeys, opening into the conservatories, the first-floor of which is a sort of bower for the ladies, a retreat from sun or shower, where they can bring their books or work and sit in summer. Above, is a billiard-room for the gentlemen. A head gardener, with one or two assistants, is to keep the grounds in order, and this part of the scheme is already carried out. The conservatories are full of choice plants and Vines, which have borne their first fruit. Peaches, Apricots, Melons, and all the finest sorts of fruit are grown, and are to be disposed of to the tenants if they desire to purchase them at a fair price, and, after they are supplied, to the public in general."

THE GARDEN IN THE HOUSE.

BULBS FOR WINDOW AND ROOM GARDENS.

IMPORTED winter and spring flowering bulbs are now arriving in large quantities, and now is the time to commence the cultivation of such kinds as are required for early flowering. The best for this purpose are Narcissus, such as Paper-white, double Roman, and Soleil d'Or; Hyacinths, of which the single forms are best, Snowdrops, Crocuses, and Tulips. These should be potted at once in a light rich compost, while a few bulbs of Hyacinths and Narcissus may be grown in glasses of water, for the sake of variety. In selecting bulbs it should be borne in mind that medium-sized roots, well shaped, solid, and compact, are preferable, and more likely to give satisfaction than large spongy bulbs; as, when found in this condition, it is a sure sign that they are not thoroughly well developed or ripened. All bulbs should be potted as soon as received, for, if allowed to lie about, they lose much of their energy by the evaporation that takes place from their surface. The best compost to employ is one consisting of one-half fresh turfy



A Perforated Vase for Spring Flowers.

or fibrous loam, to which one-third of peat and leaf-mould is added, and one third well rotted hot-bed manure, adding sufficient coarse road sand or sandstone grit to keep the whole in a fresh and open condition. The pots used should be scrupulously clean and well drained. In potting, place the bulb in the centre of the pot so that the crown is just below the soil when the operation is finished, and the surface should be left perfectly level and firm about half-an-inch below the rim of the pot. This is not actually indispensable to success, however, as when bulbs are planted in the borders outside they are covered with 2 or 3 inches of soil. After potting, the roots should be set in rows nearly close together, under a north wall or fence, and covered with sand or sifted coal ashes to a depth of from 3 to 4 inches. This covering serves two or three purposes, it protects the bulbs from cold and frosts, and prevents their forcing themselves out of the pots when making their roots, and it also keeps the compost round them in a state of genial moisture, and does away with the necessity for watering. The plants root freely and throw up their crowns in a few weeks, and are then ready for forcing, or for removal indoors to bloom. The sand also serves a very useful purpose in retarding the

plants that remain, so as to keep up a succession of flowers after the first spikes open. After removal indoors, the pots should have a light airy position, and will require liberal supplies of moisture at the root. A little clear manure-water will prove very beneficial when the pots become filled with hungry roots, which generally happens just as the spike approaches maturity. Crocus, Tulip, and Narcissus bulbs may be treated just in the same way; only the smallest bulbs may be inserted three or more together, in a 48 or 32-pot. The accompanying illustration represents a globular Crocus pot, pierced with holes, opposite each of which a Crocus bulb is placed, and the intervening spaces are filled with compost. Some use moist Sphagnum in place of soil, and, if the bulbs are well ripened, it answers nearly equally well. A Hyacinth bulb, planted at the top, finishes off the arrangement in a pleasing and artistic manner. Crocuses and Snowdrops, if planted any time before November, in the window-boxes outside, will flower freely during the first bright sunny days of spring, and give a very cheerful appearance to the window-sill, especially if the bright tints of the early blossoms are contrasted with fresh green Ivy, Box, Aucubas, Periwinkle, Euonymus, or other free-growing hardy shrubs and climbing plants. Hyacinths and Narcissus bulbs may now be placed in common Hyacinth glasses, filled nearly full of tepid water. Care should be taken to prevent the base of the bulbs touching the water below, and if a space of about half-an-inch is left between, the roots, attracted by the moisture, soon protrude from the base of the bulb, and find their way down inside the glass. If this point is not duly attended to, it often results in the bulbs rotting away at the base, and this is especially the case if they are unripened or loose in texture. Few early-flowering plants give greater satisfaction to the amateur than these, as they are so easily grown, and flower so quickly after being potted. In addition to those mentioned above, flowering bulbs of both the Belladonna and Guernsey Lilies may now be purchased for a few pence each, and these, if carefully re-potted at once in any light rich soil, will flower in a week or two, and will keep the window gay until Hyacinths and Narcissus develop their delicate wax-like richly-perfumed flowers. It is a good plan to surface the spots containing bulbs with fresh green Moss, if it can be obtained, as it not only gives a fresh and pleasing appearance to the window, but keeps the roots below in a more equable state as regards moisture. All the above will grow well in an ordinary window if duly attended to, but if there is the additional advantage of a Wardian case or window conservatory, they may be forwarded thereby so as to flower much earlier. Last year I placed newly imported Hyacinths—in glasses of soft water—on the mantel-shelf in my sitting-room, and these received no extra attention, except giving them a fresh supply of tepid water every week. Bulbs so treated, if well ripened, flower in about six weeks after they are placed in the glasses, and last a long time in flower.

F. W. B.

DINNER-TABLE DECORATION.

Vases for the Drawing-room.

LARGE vases, I always think, look out of place in drawing-rooms, where all that is required is just a few flowers, gracefully grouped in small vases, and a few specimen glasses placed here and there. At the exhibition of the Royal Horticultural Society, held at Birmingham, in the class for drawing-room decorations, I was fortunate enough to take the first prize, with a trumpet-shaped vase having three curved branches, and dressed as follows:—In the bottom dish or tazza, were three Water-Lily blooms, and some Maiden-hair Fern, the edge being ornamented with a few fronds of *Lastrea filix-mas*; the three curved trumpets were filled with blue Corn-flowers, white Sweet Peas, Maiden-hair Fern, &c., and the top was decorated in a similar manner, but contained, in addition, white Rhodanthe and wild Grasses, while amongst the trumpets trailed long sprays of the pretty *Lygodium scandens*. A smaller stand, to which was also awarded a first prize at one of the Crystal Palace exhibitions, struck me at the time as being most elegant and chaste in form. It consisted of merely a very small flat glass dish, with a slight trumpet rising out of the centre; in the tazza were merely three Water-Lilies,

some green Oats, and a few Ferns; in the trumpet were simply Oats and Rhodanthe, flowers of no great importance, but at few exhibitions has there been a more charming little arrangement. I have even seen neat little stands, which consisted merely of an ordinary specimen glass set in a tea-cup saucer. Thus the saucer may be filled with yellow Rose-buds, Neapolitan Violets, leaves of sweet-scented Geraniums, and a few fronds of *Adiantum cuneatum*, the edge being finished off with a thick wreath of Fern fronds; in the little trumpet or specimen glass were placed a few sprays of *Deutzia gracilis* and Ferns. Specimen glasses of a somewhat large size, with a few flowers placed in them also, form pretty decorations; but the flowers selected for this purpose should be of the best sorts, and perfect specimens of their respective kinds. One which I saw at the house of a friend, and which I much admired at the time, contained some spikes of Cape Heaths, a bloom of *Panocratium fragrans*, and a few drooping bells of a small pink Cactus, the bouquet (if I may so call it, though it was not tied) being backed up by some fronds of hardy Ferns; against these were placed the Heaths, then the *Panocratium*, and the Cactus blooms drooped over the edge, the whole being shrouded by Maiden-hair Fern. Orchids are flowers just suited for vases of these descriptions; what, for instance, looks more elegant than a few blooms of *Dendrobium nobile*, mixed with a few spikes of Lily of the Valley, set in a miniature bower of *Adiantum cuneatum*? Hyacinth glasses are also very suitable for drawing-room decoration, especially those having opaque grounds ornamented with gold. These may contain larger blooms than those mentioned for trumpet-shaped glasses, as, for example, Roses, Fuchsias, Pelargoniums, Cactuses, and others; but, associated with these, as well as with flowers of smaller sizes, should be wild Grasses, so blended as to give a light look to the arrangement. Oats, in a green state, as I before mentioned, are useful for this purpose, though not so light looking as ordinary Grasses; both, however, may be purchased in bunches during summer in Covent Garden, therefore, both town and country readers have an opportunity of testing their value.

A. HASSARD.

ALPINE PLANTS AND HARDY BULBS ON THE WINDOW SILL.

THIS is now the fourth season since my outside window-garden was planted, and it has gone on improving so that in the hottest day of summer and the coldest day of winter it is full of attraction. Saxifrages, Sedums, *Sempervivums*, Campanulas, *Lithospermum*, &c., are one or other in flower; and as regards bulbs in autumn, we have the *Sternbergia*, *Zephyranthes*, autumn Crocus, and *Colchicum*; following these come the Snowdrop, the spring Crocus, and *Scilla sibirica*; and in window gardens, where a greater depth of soil is given, the Hyacinth and the *Narcissus* may be introduced with advantage. The construction of the outside window garden may be stated to be of the simplest possible character, so that anyone can make it, or have it made by an ordinary carpenter. We used yellow deal, and the width may range from 12 inches to 2 feet according to space. At the back of the garden is a strip of wood 3 inches in height, which may be made higher or lower according to taste, and scalloped or plain. The front should be somewhat ornamented. This structure, while resting upon the sill of the window, is raised on blocks a quarter of an inch to allow of drainage, and preserve the sill from damage. The soil used should be a good compost consisting of road-scrappings, loam, and leaf-soil, the surface undulated according to taste, working in judiciously a few stones or shells, so as not to be conspicuous, and then planted to be the most attractive from the room. Between the scallops or ornamental part of the woodwork in the front, trailers should be inserted, so as to have the best effect, with *Sempervivums* as rosettes; or, if a rustic facing is given to the garden, Sedums, Saxifrages, and other rock-loving plants do well. When shells are introduced, small growing *Sempervivums*, such as *montanum*, or the Cobweb House-leek are the most desirable to plant in them. The class of plants which I consider most desirable for a window garden are the dwarf-growing Alpine plants, with just sufficient elevation to break the lines, and from the following genera a good selection can be made:—*Alyssum*, *Androsace*, *Antennaria*, *Arabis*, *Arenaria*, *Armeria*, *Arum*, *Aster*, *Aubrietia*, *Bambusa*, *Bellium*, *Campanula*, *Dianthus*, *Draba*, *Dielytra*, *Hebeveria*, *Erinus*, *Hepatica*, *Iberis*, *Iris*, *Linaria*, *Linum*, *Lotus*, *Lithospermum*, *Lychnis*, *Lysimachia*, *Myosotis*, *Nierembergia*, *Oxalis*, *Phlox*, *Potentilla*, *Primula*, *Sibthorpia*, *Soldanella*, *Spergula*, *Saxifraga*, *Sedum*, *Sempervivum*, *Silene*, *Thymus*,

Viola, *Veronica*, according to situation and aspect. Of bulbous plants, add *Sternbergia lutea*, with its large yellow Crocus-like flowers in autumn; *Zephyranthes candida*, with its silvery-white blossoms in autumn, the autumn Crocus and the autumn Scilla; and for spring blooming, the intense blue *Scilla sibirica* and *bifolia*, the spring Snowflake, the Snowdrop, the Crocus, the miniature Hyacinth, the *Narcissus Bulbocodium*, *nanus*, and *minimus*, the *Bulbocodium vernum*, the dwarf early single Tulips, *Iris persica*, and *reticulata*, and, besides these, many other bulbous and tuberous-rooted plants would contribute their charms, so that within a limited space a garden may be had with representatives from every temperate clime. The invalid who can only be moved in a chair can tend this garden, while those who are much confined indoors have only to turn their eyes to the window to enjoy a pretty miniature Alpine garden. To children it is a delight. In their culture there is no difficulty, and the window garden once planted simply requires to be kept free from weeds and attended to with water.

PETER BARR.

THE FRUIT GARDEN.

TRANSPLANTING FRUIT TREES.

MANY say that fruit trees should be moved as soon as the leaves are off. The soundness of this view depends, I think, in part on the conditions under which the removal takes place. If the trees have to be procured from a nursery or elsewhere at a considerable distance from their destination, so as to entail their being any time in transit, no doubt, just after the fall of the leaf is the best; inasmuch as, if removed whilst the leaves are yet quite green and plenty of vitality in them, with the consequent sap in the wood, the bark would shrivel and the leaves wither and fall at once, to the certain injury of the trees. But there are very many occasions when it becomes necessary to remove fruit trees where the distance of removal is short—such as in thinning out when trees have become too close, or where alterations have to be made requiring the ground they occupy for other purposes. In removals under such circumstances that from time to time I have had to effect, from the beginning of September until the end of February, I have carefully noted the result; and, except in the case of quite small trees that had recently been moved, or very large ones that had in no way been prepared by previously cutting back their roots, I always found the earliest period after the fruit-buds were set the best for several reasons. In the case of Peaches, Nectarines, Apricots, Apples, Pears, or Plums, that have been planted from say four to a dozen years, these should always be prepared by cutting their roots well back the autumn twelve months previous to planting; this, as is well-known, checks the vigorous disposition of the trees, and causes them to form quantities of small feeding rootlets near home, which, by the exercise of reasonable care, can be removed without a great amount of mutilation, and are at once in a condition to act. Take, for instance, Peaches; when a new wall is furnished, the trees are usually planted doubly as thick as there is ultimately room for; consequently, the time comes when every second tree has to be removed; these often come in to fill up blanks, or possibly to furnish a Peach-house. The question then becomes—at what time can they be removed so as to entail the least loss of time in their producing fruit in their new position? In such cases as this, with reasonable forethought, every facility exists for preparing the trees, and transferring them without delay, and with the least possible mutilation of the roots, to their new quarters. And then, without hesitation, I should say remove them as soon in the autumn as the bloom buds are set, and the fresher and more leaves they have the better. Of course, this implies that they are thoroughly soaked with water when planted, and kept well supplied with it, so long as the weather is such as to require it, and if a few mats are hung before them in sunny weather they will be none the worse for it, in addition to syringing overhead. Trees removed early and so treated, will make considerable root progress before the winter; during which, as a matter of course, the roots will require protection by mulching, and the trees may be expected to carry a fair crop the season following. The same holds good with Plums, either on walls or in the open ground; and during the season following, both must receive plenty of water in dry weather, as any stone fruit

that has received a check at the roots will suffer more from a deficiency of water than either Apples or Pears. I have seen a Plum tree that the season after being removed as described set fruit thickly, and threw the greater part off at the time it ought to have stoned; while another tree of the same variety (Victoria)—moved at the same time and similarly treated in every way, except that it received plenty of water—finished a full crop, the individual fruit, however, not being so large as if removal had not taken place. This early removal of Apples and Pears has a similar effect upon these fruit; but with Apples early planting has an influence that extends beyond the first year after removal. Anyone who has had experience in the removal of Apples when the trees have arrived at a considerable size, or that have root-pruned somewhat severely any which were over-vigorous and unfruitful, will have noticed that for two or three summers afterwards the trees would make but little growth, and most likely be severely attacked by red spider, which, if not destroyed, would prevent the fruit from attaining its natural size, even the second or third season after transplantation—a circumstance obviously caused by the trees beginning to push growth in the spring after removal, before there were any feeding roots at work to supply the exigencies of leaf and shoot formation. If the trees are removed early in the autumn, as suggested, this stunted condition does not follow.

One thing is common to all standard, pyramid, or even bush trees that are removed after having arrived at any considerable size—they must be thoroughly secured by stakes for a couple of years afterwards until they have got good root-hold, so as not to be shaken by the wind; for, if they work about at all, they never can, by any possibility, lay proper hold of the soil. In the case of Currants and Gooseberries that have got a good size, these fruits, if removed late in the season, as will have been noticed, make very little growth for several years afterwards, all the energies of the trees being directed to bearing fruit, which is generally, under such conditions, small; but early removal has a considerable influence in causing freer growth and larger fruit. Large trees, that had attained considerable age, it would not be safe to remove until all their energies were at rest. I have seen large vigorous-growing Pears 18 feet in height, that had occupied the gable ends of buildings, removed and do well, bearing much freer in the course of a couple of years after than ever they did previously; but, in the case of such trees as these, I should not attempt their removal until all the leaves had fallen. In the planting of fruit trees in general, especially in private gardens, there is an almost general disposition to plant too many varieties in the case of Plums, Apples, and Pears. An exhibition of several hundred varieties of Apples and Pears is an interesting display; but, so far as affording data sufficient to enable anyone to make a judicious selection for planting in any part of the country, it is worse than useless; inasmuch as the appearance of a dish of fruit, even if an opportunity existed for tasting the quality, is very far from being certain evidence of the advisability of attempting to grow it; the reason being, that nine-tenths of the varieties obtainable are often shy in bearing, weak in constitution, or have some other faults. If the general merits, or suitability, of any variety of these fruits for cultivation in any particular situation could be determined in a season or two, as with Potatoes, the case would be different, and the loss of time and disappointment would be inconsiderable; but such is not the case; Pears, even when grafted on the Quince, and Apples, on stocks that have the earliest bearing disposition, take some years to prove their fitness for any particular locality.

Previous to planting fruit trees the best and only reasonable course is to ascertain the varieties that are found to answer most satisfactorily in the neighbourhood. This is the most certain guide to follow, so far as the principal planting goes; if there is an inclination to try any newer varieties that make their appearance, or any promising sort that may not have been tried in the immediate district previously, no harm can be done; but, for the general supply, always depend upon sorts that have been proved on or near the spot, even if they are slightly inferior to others with which you may be acquainted. This more particularly applies to Apples, and that to culinary varieties; for, justly

prized as are good dessert sorts, still it is to the cooking kinds to which the greatest importance is attached, for of all the fruits we grow there are none that bear any comparison with these for general use. My impression is that there is nothing in the shape of food more conducive to health than cooked Apples, especially such varieties as are somewhat acid. The frequent recurrence of late spring frosts, that for the last twenty-five years we have experienced, has rendered many of the early-flowering or tender sorts of little use. The present season, if turned to proper account, should teach us much as to the varieties best calculated to resist a low temperature during the blooming season. The returns of the fruit crop throughout the country are both interesting and useful; but if, and especially in such a season as the present, a return was made from each division of every county as to the varieties that are carrying good, moderate, light crops, or total failures, more reliable information would be afforded than has ever yet been obtained as to the great essential—hardihood of the varieties in cultivation. This year such information would carry more than usual weight, as we have seldom had a season when not only every variety, but almost every healthy tree, was so fully ripened and covered with fruit buds as was the case last autumn. I noticed many trees of large size that had got into the very usual habit of fruiting every alternate year, with scarcely a bloom bud upon them in the intervening season, that last summer carried full crops, and set a profusion of bloom buds as well. New varieties of Apples and Pears keep making their appearance, but, as I have repeatedly urged, my impression is that most of the raisers begin at the wrong end. No doubt the raising of new fruits is both interesting and profitable to those engaged in it, and deserves the highest commendation if they are improvements upon existing varieties; but if not, they are nothing less than an infliction upon those induced to try them, and retard instead of advance the pursuit of fruit culture, being useless to all except those immediately interested in them. The raisers of new varieties of Apples and Pears appear to keep continually working from the best flavoured varieties, regardless of their hardihood; and their productions do not appear to possess any distinctive merits beyond those of the sorts from which they have been raised; often the reverse is the case when the new comer has been sufficiently tested so as to give conclusive evidence of its actual worth. Allow me to be rightly understood; no one is less disposed to council a standstill attitude in anything connected with horticulture than myself, but we had better stand still than proceed in the wrong direction. Instead of raising new kinds of fruits from such parentage as is generally employed, I hold it would be much more advisable to breed from free-bearing hardy kinds, and, above all, such as have a late blooming disposition (an indispensable property, on account of the better chance they have in escaping frost), and endeavour to obtain new sorts with the hardy constitution of those we breed from, combined with superior quality in the fruit. But the groundwork of all improvement must rest on a hardy vigorous constitution. Some time back a discussion arose respecting Apple stocks, and by some who wrote on the subject a disposition to push early in the spring was held up as an advantage. Nothing could possibly be more fallacious on account of the increased danger that would arise to the earliest blooms from frost.

T. BAINES.

LOW ESPALIER FRUIT TREES.

I HAVE lately seen in a garden in the Isle of Wight some Apple and Pear trees trained as espaliers, in height scarcely exceeding 3 feet, most, if not all, of them having four tiers of branches. The low height at which they were trained did not appear to operate unfavourably upon their produce. A Marie Louise and a Bon Chrétien (Williams's) each carried quite as much fruit as any tree ought to be allowed to mature in one season, nor did any of the Apple trees trained in the same manner equal either of these two Pear trees in production. On the Marie Louise I noticed several Pears on the lowest tier actually touching the ground. From their appearance I infer that they were planted about twenty-five or thirty years ago, and they exhibited evident traces of neglect or bad management in past years. The top branches, for the most part, instead of

being the least, are the largest in circumference, and in some instances are covered with a hedge of spurs upwards of a foot in length, and it is only of late years that they have been taken in hand by an experienced gardener. I measured the trees carefully and cannot be mistaken as to their height. We often see in small kitchen gardens 5 and even 4 feet espaliers, where a greater height would be detrimental to the vegetable crops, by unduly intercepting the sun's rays, and interposing obstacles to the free circulation of air. My own experience leads me to think, and my view is supported by what I saw in the Isle of Wight, that height is not essential to the successful training even of the Pear, if the following particulars are carefully attended to. During the first few years each lower branch should be kept well in advance of the one next above it, and, when the tree has reached the limit of the distance allowed, it should be made to take a form that would admit of each lower branch remaining longer than the branch next above it, an example of which may be seen in the form called the Palmette. Another important matter to be attended to, especially in the case of free growers on the Pear stock, is the regulation of the parts whence the bearing shoots proceed. The distance from bud to bud along a last year's shoot varies from about 1 to 2 inches. In the following year most of these buds will be developed into either fruit-bearing or ordinary leaf shoots. If all of the latter were allowed to remain the tree would soon be overcrowded, therefore, the thinning of these shoots from time to time becomes necessary. In the course of years, as the tree advances, bare spaces of 6 inches in length will not be too much to leave clear of shoots, and the sooner the branches are cleared to half that distance the better. Then the branches that form the highest tier will, in about the third year of their growth, begin to give trouble unless they are repeatedly thinned and carefully attended to during the summer. For want of due attention in this direction many an espalier has been hopelessly deformed with what is called a *tête de saule*, interesting specimens of which may still be met with in old kitchen gardens. By all means, therefore, begin with your top tier in good time, and if, as is often the case with twiggy sorts, like the Marie Louise, there is likely to be an overcrowding of shoots, cut several of them clean out with a penknife when they are about half grown. With regard to summer pruning with a view to fruit bearing, follow whatever system appears to you to be best adapted to each particular sort, but at the winter pruning take care that your main branches are regulated in such a way as to leave each lower branch 8 or 10 inches longer than the branch immediately above it. Cut away, if necessary, from any one of them the whole of last year's growth, and even more than that if the form of your tree requires it. If, however, any one branch is deprived by an accident of a portion of its length, it may be made to overtake the others by allowing the shoot that springs from the ruptured part to take a gentle curve upwards, training it across the other branches till it reaches the top; in this position it may continue its growth vertically till it regains its proper length, when it may be straightened and laid in its proper position. For Apple and Pear trees in kitchen gardens, the espalier form is so very convenient that it is encouraging to find that even the Pear can be grown with advantage at a height from the ground well within the reach of the operator's hand. In such a form, and at such a limited height, some sorts may not thrive as well as others; but the bare fact that two trees, neither of them so much as 4 feet high, should produce more than average crops, goes far to prove that height, however beneficial, is not essential to the successful cultivation of the Pear.

B. S.

THE PROPER SIZE OF POTS FOR PINES.

YOUR correspondent, Mr. Muir, observes (p. 219), that according to his experience "large pots require much more room than smaller sized ones." It would be useless attempting to dispute such a self-evident proposition, but I would remark that there are pots, and pots, for growing Pines. This subject has been discussed often enough before, and I think nearly all good Pine growers are unanimous in adopting the average 12-inch pot for fruiting purposes. I have visited most of the noted Pine growing establishments in England and Scotland, and, though pots of different shapes are to be found, the 12-inch is the one generally in use. The mere assertion that so and so grows his Pines in 10-inch pots conveys no meaning. There is a form of pot made in

Scotland, and much used for Pine growing there, called a 10-inch pot, but I imagine it will contain about as great a bulk of soil as the ordinary 12-inch or 14-inch one, for it is deeper than usual, and about as wide at the bottom as the top, whereas, in the ordinary shaped pot the bottom is only about half as wide as the top. If your correspondent would give the inside measure, top and bottom, and depth of his pots, your readers could form their own opinion in the matter. I have had Pines from Scotland in those so-called 10-inch pots, and found that they held just about the same quantity of soil as our 13-inch ones, and I have an impression that Mr. Muir refers to the same kind of pot. I am not an advocate for large pots, but I believe in large plants, and would give them the largest pots, as a matter of course. Mr. Muir says that large plants do not "by any means" produce, as a rule, the best fruit, an assertion which I regard as wholly unsupported, either by theory or practice. All other things being equal, the largest plants do, invariably, produce the largest fruit. This is a well-established fact, and not a matter of mere opinion now-a-days. I do not know a Pine grower of any note who does not make it his endeavour to get up the greatest amount of vigour possible in the plants, and plants of the largest size (I am not speaking of elongated specimens); nor do I know anyone who does not advocate large suckers to start with; and for what reason? Simply that he may have large plants and consequently large fruit. Mr. Ward, of Bishop Stortford, who has on many occasions exhibited some of the largest and heaviest Pines on record, believes only in suckers of giant dimensions; his plants are of proportionate size, and his Queens—to take them as an example—used to attain a weight of 6 pounds. Do we not also find the strongest growing varieties invariably producing the largest fruit—the Smooth Cayenne is more robust than the Queen, and yields proportionately heavier fruit; the Providence is a stronger grower than either and produces the largest fruit of all, and with the least trouble. It may be better for market purposes to grow more plants and have a greater number of fruits of moderate size, but let no aspirant in Pine growing get hold of the fallacy that there should be a limit to the size and vigour of his plants, provided he can get them thoroughly matured. As to the room required for Pines in the bed, I agree with your correspondent that 2 feet is ample in houses that are as light as day, to which probably his experience has hitherto been confined; but in old houses with narrow panes and sashes, or where Vines are grown overhead—conditions under which very many Pines are still cultivated—I am afraid he would find it necessary to modify his opinions considerably if he wished to get vigour enough to furnish 5 pound fruit.

A PINE GROWER.

Cherry Trees Killed by Sunstroke.—A paragraph in a Chicago journal gives an account by an eye-witness of the destruction of two Cherry trees by sunstroke. The owner, a Mr. Viesen, was standing near to them at the time (3 p.m.), when he suddenly heard a noise, which he compares to the splitting of wood. Looking in the direction of the sound, he perceived the bark of the two Cherry trees peeling off in a rapid and curious manner. The peeling commenced at the tops of the branches, and rapidly curling downwards, almost immediately stripped both branches and trunks, to the surface of the ground. The aspect of the trees was similar to that of trees stripped by lightning; foliage, bark, and fruit were cleanly peeled off, and lay in a crumpled mass at the foot of each tree, the process of scarification having been completed in the brief space of three or four seconds. It is scarcely necessary to add, that the wood appeared as scorched and dead, as though the destructive element had been that of the electric fluid of lightning, and the leaves and bark were as scorched and withered.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Plum Trees Gumming: F. H. Plum trees are very liable to gumming after having been severely pruned, or having been transplanted when growing freely. Prune away the worst affected parts in winter. The healthy shoots will soon fill up the place of those removed.

Transplanting Large Plum Trees.—I am thinking of transplanting several Plums, &c., that I value highly, and shall be obliged by your telling me the best time, and if I should cut them back.—H. W. [Do it in October. Except the tops are very large and want pruning, you need not cut back, or but little. In moving, trace out and preserve all the roots you possibly can.—W. M.]

The Trebbiano Grape.—I quite agree with your correspondent "B. J." (see p. 220) as to the merits of this Grape. "B. J." speaks of it as a late Grape, but I go further, and say of all white Grapes for pot culture the Trebbiano is by far the best. I have exhibited noble bunches of it at Stamford, weighing 4 lbs. each, finely coloured, of the best possible shape, not over large in berry, and of good flavour, all cut from pots; and I have just now some fine canes of it in pots for early forcing. In fact, so much is the variety in question thought of by both my employer and myself, that I would not be without it on any consideration.—R. GILBERT, Gardener to the Marquis of Exeter, Burghley, Stamford.

THE FLOWER GARDEN.

THE ANEMONE-LEAVED CRANE'S-BILL.

(GERANIUM ANEMONEFOLIUM.)

THIS is one of those plants which some years ago had all but disappeared from cultivation. The wheel of fashion, like the wheel of fortune, is, however, in continuous revolution, and once more this, like many other long neglected plants, crops up again. Knowing how fickle and inconstant are fashion's fancies, and also satisfied, as I am, that this *Geranium* possesses claims for general cultivation of a really substantial character, I willingly supplement the very truthful and admirable figure herewith given, with a few descriptive remarks. Introduced in the latter part of the last century from the Canary Islands, it received its appropriate specific title at the hands of Willdenow, and, along with *Geranium canariense*, constitutes a very distinct little group, holding a position intermediate between the two genera *Pelargonium* and *Geranium*, to both of which it has been, at various times, indiscriminately referred. This species, though sometimes called a biennial, is, with a little care, a long lived, somewhat shrubby, plant, inclined, after a series of years, to become long in the stem, hence it is desirable to have an occasional succession of young plants, as it does not stand "heading back" the same as the more truly woody *Pelargoniums*. It reaches its most perfect condition when its stem acquires a height of about 12 or 15 inches. The space below thus given enables the leaves, which have a tendency to reflex downwards, to arrange themselves with a grace, regularity, and lightness, that cannot be attained when the leaf development takes place from the surface of the ground. As an indoor spring decorative plant, the Anemone-leaved *Geranium* should never be lost sight of; its beautifully-divided palmate foliage of shiny green, and the mass of flower-stems rising above the same, covered with a succession of rosy-red star-like blossoms, give the plant an attractive appearance, perhaps all the more powerful from the charming simplicity of the flowers themselves. When planted out in the flower garden, it should not be the sole occupant of a bed to itself, as its appearance is too sombre; enlivened however, with the bright colouring of the variegated *Abutilon*, and margined with *Gnaphalium lanatum*, a few of whose vigorous shoots may be allowed to run irregularly amongst the leaves below, its beauty of form is wonderfully enhanced. In this way I have seen a bed present a very effective and novel appearance. If the ground be rich, due allowance must be made to keep the plants well apart, as, when thus turned out, with its roots ranging beyond the restrictive limits of the pot, it is not unusual for it to form leaves fully 12 inches across, on foot-stalks of about an equal, or even greater, length. In a young state, the other species, *Geranium canariense*, bears so close a resemblance to *Anemonefolium*, that it is almost impossible to recognise any distinctive characters; but, when in bloom, the difficulty vanishes, as, whereas the latter has smooth stalks

throughout the entire inflorescence, the former is clothed with the most exquisite purplish hairs, each one tipped with a tiny globule of secreted, or, perhaps I ought to say, excreted moisture. So dense and conspicuous is this arrangement of hairs, that it gives a decided character to the plant, and at once distinguishes it from its otherwise closely-allied species; added to this, the petals of the flower are broader, and, in place of a rosy-red colour, they have a lovely violet or purplish tint superadded—a combination of colours not frequently met with. Both these species seed freely, and by this means are readily propagated; so elastic, however, are the indurated styles that, unless carefully watched, the seeds are apt to distribute themselves far and wide long before the cultivator has any suspicion that they are matured.

JAS. C. NIVEN.

Hull Botanic Gardens.

ROSES ON THEIR OWN ROOTS.

To anyone acquainted with the immense number of Roses propagated every year by budding and grafting, the question necessarily arises, what becomes of them all? Granted that each year growers of Roses increase, yet even these, numerous

as they are, will not account for the incalculable quantities that are produced. What, therefore, becomes of them? Doubtless, great numbers perish, and that, from various causes, the most destructive of which are bad treatment and unsuitable soil for Roses on other than their own roots. The enormous number raised by budding and grafting has in some measure led to the impression among people generally, that these methods of raising Roses are the best; and, that advantages belong to the budding and grafting system, under certain cir-

cumstances, must be admitted, inasmuch, as by these processes they can be increased much faster than they could be on their own roots, which, in the case of new sorts, doubtless, is an advantage; and, for them, there can be no possible objection to this method of Rose propagation. But here I am of opinion it ought, in a great measure, to cease, and give place to the far better, more effective, and more natural system of growing them on their own roots, which, for general purposes, is superior to any other method. There are some that are naturally weak in constitution, and that are consequently better to manage on a stock somewhat stronger; yet even thus treated, they do not always succeed; seeing, however, that we have a multiplicity of varieties of almost every shade, the total discarding of these delicate sorts would be no loss to any except those who exhibit for competition. It is generally admitted, I believe, that the best flowers are produced from the first season's bloom after budding. I am not, however, looking at the subject from an exhibitor's point of view, but from that of the thousands who grow Roses as decorative plants only, and, for this class of growers, with few exceptions, they are in every way preferable on their own roots. There are, no doubt, places in any garden where a good standard Rose looks well and is in a proper position; but a bed or a

The Anemone-leaved Crane's-bill (*Geranium anemonefolium*).

Rose-garden of standards, compared with a similar bed occupied by Roses bush-fashion on their own roots, is a very poor affair. A bed of standard Roses (apart from the peculiar associations connected with Roses above all other flowers, and their individual beauty and fragrance) is not an arrangement in keeping with good taste, and, when not in bloom, is absolutely intolerable, holding, as it usually does, a position in the best and most conspicuous part of a well-kept garden. This arises from various causes: first, the shape of the plants, with their naked stems; their unsightly appearance through the winter; and the sight through the summer of the ground covered with mulching manure, or with the always apparent efforts when attempting to hide it by Mignonette or other plants that are used for the purpose, and which have never any business there at all, on account of their extracting so much from the soil that ought to be wholly in the possession of the Roses. As opposed to this, a bed of Roses on their own roots is a most charming object, and even in the winter, when denuded of leaves, can be made to look unobjectionable. Roses on their own roots possess many advantages. The first is, there are not the unsightly gaps consequent upon the numbers of standards that lag behind, and have a sickly appearance, and which, from their position, stand most objectionably prominent. In a bed of Roses on their own roots, those which do not succeed are comparatively few, if common care is taken in selecting kinds that are not delicate growers. Hence, mulchings can be applied without being so apparent; in fact, they can be all but hid by the plants they are to benefit. The best and most effective way of treating Roses grown on this method is to peg the shoots down. Let us take a bed or garden of these that has been some time planted and treated in the ordinary way, and on which it is intended to try the pegging-down system; the plants will contain some old wood, a portion of which may have existed for years, and numbers of strong current season's shoots from the collar, or near it. In spring, when pruning time comes, cut the whole of the old wood out right down to the bottom, leaving nothing but the young vigorous shoots in numbers proportionate to the strength of the plants. If very strong, eight or ten may be left, if weaker, four or six; these may be shortened back to from 3 to 4 feet, according to the distance the plants stand apart. Procure some stout hooked sticks a foot long, so that they may have good hold in the ground; with one of these peg each shoot down evenly all round from the collar, bringing them down to within an inch or two of the ground, having previously given a good mulching with manure; they will, thus treated, break at almost every eye, and flower profusely if they are strong and otherwise in good condition. This bringing down all the shoots in a horizontal position has the effect of causing the plants to break up from the bottom much stronger than they would under other treatment, and many of these shoots will flower in the autumn after the beauty of the pegged-down portion is over. I have from these current season's growths had much better blooms, and in greater numbers, than ever I was able to get from the second crop produced by standards. If strong and in good condition, the pegged-down shoots will produce a second lot of flowers. In the winter, when the time arrives for digging the ground and putting in manure, cut out all the shoots that are pegged close from where they spring, so as to give an opportunity for the work being done in the spring, as before—mulching, pruning, and pegging down the young shoots. This method of Rose growing, I may observe, is anything but new, and the wonder is that it has not become more universal than it is amongst those who grow Roses for general purposes, a circumstance which can only be accounted for by the present system of growing them as standards having become so popular, the great bane of which, looked at from a purely cultural point of view, is their continuous disposition to throw up suckers, which, even when removed as soon as they appear above ground, greatly weaken the plants, and are a source of continual trouble; while, as regards Roses on their own roots the reverse is the case, every shoot of which, coming up from the bottom, is an evidence of strength and a future advantage. Then, again, all the tender Tea varieties, that are so often killed, even in ordinary winters—if cut down to the ground by frost, will push up strongly from the root, and flower later in

the season. There are winters that now and then occur, although they may be at considerable intervals, that forcibly remind us of their effects. Who has forgotten the wholesale destruction in the winter of 1860-61, when nineteen-twentieths of the standard Roses throughout the kingdom were killed, the few that escaped being mostly such as had been moved the autumn previous? Then three-fourths of the growers in the country avowed their intention henceforth to grow them on their own roots; yet, as time wore on, they gradually relapsed into the old system.

Were there any difficulty in striking Roses from cuttings, and, consequently, growing them under the best and most satisfactory conditions, the case would be different. Certainly, as I have already remarked, they cannot be produced so quickly or in such numbers by this method as by budding; but, for the thousands of amateurs who propagate their own Roses and who take a pleasure in such occupation, they would be the most satisfactory on their own roots. There are several methods employed in striking Roses. The first is within the reach of everyone who has sufficient ground to grow them. It is simply to take off with a heel moderate-sized shoots, neither too weak nor too strong and gross; these should be procured about the beginning of October. A nice piece of ground that is not wet, in a somewhat sheltered situation, but not at the shady side of a wall, should be chosen for them; dig it over, and, if of a heavy and adhesive nature, get some lighter loam and sand, and mix the whole together, elevating it a little. In this insert the cuttings, about 4 inches asunder every way, give them a good watering and put a temporary frame round them made of boards 6 or 8 inches deep; on this nail some wire netting to keep anything from disturbing them, and, when severe frost comes, throw some litter over them. The wire, if supported with a few pieces of timber, will carry the litter without letting it absolutely rest upon the cuttings. Here they must remain, and in spring the greater portion will root and commence to grow, when they should be removed to a nursery bed of good rich soil, planting them 15 inches asunder. If kept clean and free from insects through the summer, they will make considerable progress. They may remain here for another season, when they will be good plants, and in the autumn may be transferred to the beds they are intended to occupy.

Another and much quicker method, that can be followed by those who have the convenience of heated pits or a greenhouse, is to take cuttings off earlier in the season—the second growth that pushes after the principal flowering, as soon as it gets sufficiently hardened, which will depend upon the season being late or early—generally about the middle of August. The shoots for this should be about half ripe, taken off with a heel, have their bottom leaves stripped off, and be inserted six or eight in 48-pots of sandy loam, giving plenty of water, and placing them in a cold frame for three weeks or a month, keeping the soil quite moist; at the expiration of this time they will have become well callused, when they must be removed to a gentle hot-bed, where they will root directly. On no account must they be placed in heat before this callusing process has taken place; otherwise not one in a dozen will strike. When they have pushed an inch or two, they must be potted off singly into 3-inch pots, in good soil, and replaced in a temperature of 50°, with a moderate amount of air and a growing atmosphere. Here they will gain strength, and must be encouraged for some weeks to make growth, after which they may be removed to a house or pit for the winter with an ordinary greenhouse temperature of from 35° to 45°, the object being not to allow growth to become quite stagnant. From the small size of the plants, a large number may be accommodated in a little space. In the spring, as soon as they begin to move, shift them into pots a size larger, and place them in a pit or frame, where they can be so treated as to induce them to grow. Gradually inure them to the air, and in the beginning of May plant them out in good rich soil in an open situation; by this means a season's growth will be gained over what may be termed the dormant cutting system. All they require is keeping free from aphides and weeds, and giving a sufficient supply of water in dry weather. In the autumn they may either be removed to the ground they are ultimately to occupy, or they may be allowed to remain another season; all that is necessary is not

to neglect them in their preparatory stages. Some there are who may be disposed to say that this involves considerable attention and room under glass; yet the same individuals have never most likely considered that it is no more than is required for ordinary bedding plants, that only last for a few months at their best, while the plants in question will last for a number of years and go on improving. In the case of such kinds that are already possessed in strong plants grown in the way under consideration, and which it is desirable to increase, this can be done well and expeditiously by—in the spring when they are pegged down—removing an inch or two of soil, and sinking into it about 6 inches of the points of some four or five of the shoots from each plant, well securing them with the hooked sticks; these will push up strong growths, rooting freely and making large plants the first season, that in the autumn—about the end of September—only require severing from the old plant and transferring to where they are to remain; they will flower well the succeeding summer, and the year following will make plants as large as ever they will be required. Any one having Roses grown in this way, let the number be large or small, can, by this system of layering, quadruple his stock every year, without in any way interfering with the flowering of the plants. There is yet another advantage—that in some places where the ordinary stocks, Dog Rose or Manetti, will not thrive, Roses on their own roots, if free-growing varieties are selected, will succeed. Therefore, my advice to all lovers of Roses is—grow them on their own roots. T. BAINES.

DRAPING DEAD WALLS.

DEAD walls are the nightmare of many a suburban garden. However perfect the latter, the walls, which of necessity bound it, in most cases mar it more or less. Draped with Roses, Jasmines, and Honeysuckles, the bricks and mortar are hidden, but the straight sharply-defined lines remain. Get rid, by any means, of the straightness, and substitute curved lines of beauty, or irregular lines, and picturesque, and the most objectionable features of walls vanish. We have long been advocates for breaking up the flatness of the ground lines of gardens and partially destroying the tiresome monotony of straight walls with mounds of earth. It is astonishing how much can be done by such means, and by clothing the mounds by judicious planting. By the influence of raised base lines, and their skilful furnishing with trees, shrubs, and plants, the wall lines may be almost totally concealed, and the sharp corners at least rounded off with vegetation. The stiffness of the visible portions of the walls may be relieved by a loose style of training. Jasmines, Honeysuckles, Clematises, Virginian Creepers, Banksian and other Roses should be backed up against rather than closely trained to walls. Ivies, likewise, are quite different plants when left to roam very much at their own sweet will. The Japanese Honeysuckle is also one of the most suitable plants for this free style of furnishing. Its golden shoots stream down in profusion, covering the bare crown or face of walls as golden ringlets do the shoulders of childhood. Virginian Creepers, again, and the Wistaria are admirably adapted to this loose style of training, also all the large leaved kinds of Aristolochia and the ever welcome green of Figs and Vines. By allowing a free summer growth, the stiffness of the boundary walls of villa gardens may be hidden behind a massive screen of pendent shoots and beautiful foliage. This freedom is, as a rule, the one thing that villa gardeners seem intent on destroying. Close spurring and a smooth straight surface are the only modes of pruning and training adapted by almost the whole race of professional wall dressers, who go about with knives and shears and ties or nails seeking to fasten up or destroy each free and graceful growth they can find on the face of the wall. They have but one idea of cropping—the convict model—all round and all bare alike. If walls are to be gracefully draped, they must first be emancipated from the hard and fast lines of the jobbing gardener. The lady who can attire herself with elegance, has received the best training for the draping of her garden walls. To prevent mistakes, however, it is needful to bear in mind a distinction. To trim a dress means to add a new grace to it; to trim a wall, as generally understood, is to slash all grace off it. But after all that can be done by the raising of banks of earth and planting them with skill, and the furnishing of the walls with a free growth of suitable plants, the chances are that pieces of wall, straight and bare, may still be visible here and there. In such cases, and also where difficulties may occur in the way of adopting the foregoing methods of adornment, or in conjunction with them, the wall itself may be operated on. The best materials for this purpose are lumps of stone, burrs, or spoilt bricks, clinkers dipped in cement, or even the refuse of smelting furnaces; these, in considerable masses, may

be used along with old roots or pollard stumps on the crowns and sides of earth mounds so as to give greater variety of outline, and afford root runs at once suitable and picturesque for various creeping or other plants, and for Ferns and succulents, both excellent for the draping of walls earth-cased or otherwise. Mineral or vegetable *débris*, such as wood or cork, may also be placed on the surface of the walls in such a manner as to form irregular outlines and furnish pockets, recesses, and crevices full of suitable soil for the nourishment of such plants as Ferns, succulents, and drooping or dwarf Alpines or other plants. Perhaps hardly any more useful plants could be named than *Linaria Cymbalaria*, *Lysimachia Nummularia*, *Phlox subulata*, *Campanula rotundifolia*, *C. garganica*, *Lithospermum prostratum*, *Potentilla alpestris*, *Antirrhinum rupestre*, *Veronica prostrata*, *Saxifraga sarmentosa*, *Helianthemum*, all the slender varieties, &c., &c. Again, Ferns alone would drape a wall, almost any wall, to perfection; and, fortunately, the cold northern or eastern, or any shady slimy wall, where nothing else would thrive, is just the favoured haunt of Ferns. With sufficient peat soil to root in, and the garden engine and watering pot given overhead now and then, they can be made to beautify and adorn any wall, however bleak and bare.—*Villa Gardener*.

Momordica Charantia.—This is a widely spread East Indian Cucurbitaceous annual, which has bright yellow oblong fruits, from 4 to 8 inches long, tapering to both ends, and covered all over with little wart-like protuberances, some irregular and others in lines, along which they split when ripe. The flowers are too small to be ornamental; the chief attraction therefore is the fruit, which, when fully ripe, splits up into three parts, and has the appearance of a bloom with large thick petals. The inside is wholly covered with a deep red pulpy matter, which forms a fine contrast with the yellow exterior. The seeds imbedded in the pulp look as if carved. The plant generally takes from two to three months to mature its fruit from the time when the seeds are sown, and then it keeps in bearing condition for some months. The seeds should be sown in a light soil, and assisted to germinate with a little bottom heat. When the young plants are large enough to handle, they may either be planted out and trained on a trellis, or grown on in pots, and staked into a balloon, or pyramidal shape, or any form desired. As it is a gross feeder, a rich soil suits it best, and the fruit is improved in size by an occasional application of liquid manure.—*J. MUIR, Clovenfords*.

New Bedding Violas.—I heartily recommend the three following forms—*Viola cornuta Sensation*, *Viola cornuta Admiration*, and *Viola cornuta Purple Prince*. The former is, perhaps, the earliest of these examples of “new blood,” the second and third, the second especially, being among the most telling of all summer bedding plants, especially when mixed with any of the white variegated-leaved *Pelargoniums*, such as *Bijon*, *Flower of Spring*, &c. As even a preferable companion to these, I may instance the old *Mangles Variegated Pelargonium*, amongst which I have some of these Violas growing, and the effect is certainly heightened, as the Violas seem to show up better from amidst the more procumbent stems and the smaller blooms of this kind. Then, again, as early spring plants, for blooming along with the Daisies, *Yellow Cliveden Pansies*, *Silenes*, *Primroses*, *Polyanthuses*, and *Tulips*, they are unapproachable. I have also seen them introduced in circular masses in front of young shrubberies, thus forming a continuous link in the chain of display, brilliant in their effect, of which similarly-coloured *Crocuses* give the foretaste, but which these Violas certainly beat, both in respect of colour and of distant effect.—*WILLIAM EARLEY, Valentines*.

Autumn Meadow Saffron (*Colchicum*).—It would hardly be possible for those who have not seen the leading varieties of *Colchicum* in bloom to conceive how decorative they are in the flower garden, and how valuable for prolonging the succession of flowers. In September and October, and even in November, the display produced by a good collection of *Colchicums* proves most attractive. Some of the varieties have beautifully chequered flowers, and most of them are so floriferous as to cover the ground with a sheet of blossom, and as the leaves do not appear till spring, at a little distance the effect is peculiar, there being nothing but colour. The best position in the flower garden for the *Colchicum* is the mixed flower and shrubbery border, and the woodland walks, but its accommodating habits readily admit of its utilisation in flower beds. In beds of dwarf plants, or where the *Geraniums* are not crowded together, the roots of the *Colchicum*, lifted when at rest, may be planted, making holes with a common dibber all over the flower bed, planting a *Colchicum* in each hole, and covering it with soil. These roots will throw up large masses of *Crocus*-like blossoms just as the summer flowers are dying off, and yield a most pleasing and distinct effect to the summer decoration. *C. byzantinum*, with its rose-coloured flowers; *C. variegatum*, with its beautifully chequered

blossoms; and *C. autumnale*, with its rose-purple flowers; and the purple, the variegated, and the pure white double kinds, may be intermingled or arranged separately in distinct beds. Thus, these beautiful and hardy blossoms of autumn will prove as useful in the ordinary flower garden as in the choice mixed border, or hardy bulb garden.—PETER BARR.

Hardy Aquatics.—Will you kindly furnish me with the names of a dozen hardy Aquatics? I want them both for the middle and edges of a newly-made ornamental lake, and I should also like to know where collections of these plants are to be seen?—Z. [For the central portion of your lake select such plants as the white Water-Lily (*Nymphaea alba*), yellow Water-Lily (*Nuphar lutea*), *Villarsia nymphaeoides*, the Water-Violet (*Hottonia palustris*), Bog-Bean (*Menyanthes trifoliata*), and the Floating Aponogeton (*A. distachyon*) and its varieties. For the margins nothing can surpass *Cyperus longus*, the gracefully-pendent *Carex pendula*, the white-spined North American Calla (*C. palustris*), the Marsh Flag (*Iris pseudacorus*), the Typhas, and the handsome-flowering Rush *Butomus umbellatus*. The best collections round London, with which we are acquainted, are those at Kew, the Wellington Nurseries, St. John's Wood; the Hale Farm Nursery, Tottenham; and Parker's and Rollisson's Nurseries, at Tooting. Good collections of them are likewise grown in various provincial Botanic Gardens, notably at Oxford and Edinburgh.]

The New Hardy Crinum.—With reference to this interesting plant, Dr. Hooker remarks in the *Botanical Magazine*—A hardy Crinum is a rarity in English gardens, and except the beautiful *C. capense*, I know no other but this now in open air cultivation; and beautiful as *C. capense* is, it is far exceeded in size, foliage, and colour by the subject now under notice. Crinum Moorei was introduced into the Glasnevin Gardens in 1863, by Mr. Webb, a friend of Dr. Moore's, who had served on the commissariat staff of our army in South Africa, and had brought the seeds from the interior—as Dr. Moore thinks—of Natal. During the last five years the specimen from which the drawing in the *Magazine* was made has been planted in a border fronting the conservatory range at Glasnevin, without getting the slightest protection, flowering sometimes in autumn, and at other times in spring. The leaves are cut up in the winter, but the bulbs are not seriously hurt, and soon recover themselves, when they push out a fresh set of their broad peculiarly-ribbed leaves, 18 to 20 inches long. The bulb is remarkably long, sometimes reaching 18 inches. A closely allied species to this is the *C. Colensoi*, of Natal, which will shortly be figured, which has also broad leaves and a long bulb, but the perianth-tube is much longer, and the flower smaller, with a narrower pale limb; it has been flowered by Mr. Bull and others, and may, we hope, also prove hardy.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Fruiting Duckweed (*Nertera depressa*).—Would you kindly say if *Nertera depressa* is an Alpine plant or not, and oblige J. C. & SONS, *Aberdeen*. [The Fruiting Duckweed is a native of New Zealand and the Andes of South America, and succeeds perfectly under the treatment usually given to Alpine plants. It grows in the open air, and should have a moist spot in the rock-garden.]

The Ivy Harebell on a Lawn.—Mr. Dawson (see p. 221) says, "few gardens can supply a turfy moist corner for this Campanula." It spreads freely on our lawn; and, as one portion is, in consequence, left unmown in July, we have a sheet of blue flowers, than which nothing can be more lovely. It spreads rapidly; as also *Sibthorpia europaea*, which likewise makes a lovely hanging-basket in the greenhouse, falling down fully 2 feet from the pot or basket.—E. L. R., *Yorkshire*.

Hardy August and September Blooming Plants.—"Simon" should have no difficulty in keeping his garden aglow through the autumn with hardy flowers. In addition to those named in your last number, he may have *Rudbeckia* in variety (especially *hirta*), *Oenothera Fraseri*, *Chelone obliqua*, *Dracopcephalum speciosum*, *Tritoma* in variety, *Tritoma aurea*, late *Phloxes*, *Sparaxis pulcherrima* (in great beauty just now), *Platycodon autumnale*, *Verbena venosa* (a beautiful purple), *Aconitum autumnale* (a brilliant blue), and, for the front line, *Cyclamen hederaefolium*.—SALMONICERPS.

Miniature Tulips.—Last season, after bedding out our spring bulbs, there chanced to be two or three dozen Tulips over and above our requirements. These were thrust into a small bed at the bottom of the garden, and left without water or other attention. When blooming time arrived, they turned out to be miniature Tulips about the size of large Crocuses, while their companions, viz., those which had been properly planted and cared for in show beds, were of the full and usual size. On one of the dwarfs being lifted, the root was found to be loosely surrounded by dry leaves.—F. H. B., *Cumbria*.

Roses not Opening.—I have a young Rose tree (General Jacqueminot) which obstinately refuses to expand a large number of its buds. They grow until they become large red lumps, at which stage they remain. The petals are all there, no doubt, as I have tried the experiment of forcibly unrolling them, and have produced, in some instances, a very fair flower. Can you point out the cause and the remedy?—J. W. [Drought has doubtless played an important part in this case after the buds had been formed. Clustered flowering Roses frequently behave in that way in dry seasons after the middle or leading bud has expanded. Water, or even liquid-manure, should be given if the trees are healthy, so as to avail themselves of it; and an occasional syringing over the head of the tree will also be found to be beneficial. If all this has been done, then the soil must be changed, for Roses will not open in worn out soils. Get good fresh loam, and re-pot in November.—H. G.]

THE FALL OF THE LEAF.

By HARLAND COULTAS.

THE phenomenon of the "fall of the leaf," common as it is, is very difficult to explain satisfactorily. The following are the facts, so far as we understand them, which are exceedingly interesting and instructive. It seems that Nature begins the provision for separation almost as soon as the leaf is born in spring. When first put forth into the atmosphere, the stalk of the leaf, supposing one to be present, is continuous with the stem. As the leaf and its stem grow, however, an interruption between their tissues (fibrous and cellular) takes place at the base of the leaf-stalk, by means of which a more or less complete articulation or joint is gradually and ultimately formed. This articulation is produced by the continuation of the growth of the stem after the leaf has attained its full growth, which it generally does in a few weeks. The growth of the leaf being completed, the base of its petiole, or foot-stalk, is no longer able to adapt itself to the increasing diameter of the stem, and a fracture between that base and the stem necessarily ensues; the excision advances from without inwards, until it finally reaches the bundles of woody fibre, which form the main support of the leaf. Whilst, however, Nature is forming a wound, she is at the same time making provision to heal the same; for the cuticle or epidermis of the stem is seen to grow over the surface of the scar, so that, when the leaf is detached, the tree does not suffer from the effects of an open wound. The provision for separation being thus completed, the leaf is parted from the stem by the growth of the bud at the base, the force of the wind, or even by its own weight. Therefore, as soon as the glorious colours of the autumn leaves begin to fade, this provision for separation is completed, and the winds sing their death-dirge as they carry them away from their summer's home on the branches of the trees, and scatter them in countless numbers upon the ground. The fall of the leaf is, therefore, the result of a regular vital process, which commences with the first formation of the leaf, and is only completed when it is no longer useful to the tree. There is no denying, however, that the frosts of autumn, by suddenly contracting the tissues at the base of the leaf-stalk, accelerate the fall of the leaves. All must have noticed, on a frosty morning in autumn, that the slightest breath of air moving amongst the decayed and dying leaves will bring them in complete showers from the trees to the ground. The leaves of the Beech, Hornbeam, and Oak, die in autumn, but frequently remain attached to these trees through the winter months, provided that the trees are not so situated as to be exposed to violent winds. Such leaves, when examined, will be found to be continuous with the stem; and, therefore, without that articulation or joint which so naturally assists in the separation of the leaf from the tree. These dead leaves fall off when the new leaves are put forth in spring; they are, in fact, pushed off by the expansion of the stem when the growth of the season commences. The leaves of evergreen trees and shrubs, and of Coniferous trees, as the Pine and Fir, do not fall in autumn but in spring, when the growth of the season is taking place; and, as this annual leaf-fall is only partial, consisting of one-half or one-third at a time, there is always a sufficient number of leaves left on such trees to keep them clothed with perpetual verdure. Hence it is that their foliage consists of leaves which have been attached to the stem from one to three or five successive years.

Who has not been struck with the beauty of the woods in autumn, when the leaves change their colour, and from one dull uniform green become tinted with every variety of hue? The beauty of the fading flowers appears to have been transferred to the leaves, as if Nature would rival, at the close of the growing season, those charms with which she adorned herself at its commencement. This last observation is especially applicable to the autumnal tints of the forests of North America which are much more vivid and picturesque than those with which autumn colours an English landscape; in fact, an autumn in Virginia, Maryland, or Pennsylvania, is a chapter of the beauty of the world for which the old Continents have no parallel. The birth of this beauty is as sudden as its duration is transient. A single night's frost, and the uniform green of the summer woods is succeeded by the colours of autumn—this in all their rich and inimitable shades. The forests of North



THE FALL OF THE LEAF.

America consist principally of Oak, Hickory, Beech, Chestnut, Maple, Sour Gum, Sassafras, and Dogwood, intermingled with evergreens, such as the different varieties of American Holly, Pines, Fir, and Juniper. There is, therefore, quite a variety of deciduous-leaved trees, and each of them has a regular series of colours through which its leaves pass, after they have received the death-stroke of the frost. The solar spectrum is exhausted in this fantastic display of colours. A single tree sometimes stands a pillar of fire or a glittering cloud of gold and purple; while, again, the crimson blood dye is succeeded by a tree which has taken its hue from the gaudy yellow of the Nasturtium cups or the "dolphin's back of gold." Soon, too soon, the bright colours fade! A few hours are sometimes sufficient to mar all this loveliness. A change in the temperature or moisture of the air and the beauty is gone. It has vanished like the rainbow painted on the storm cloud. The bright and varied colourings are succeeded by the dull and uniform russet hue of the dead and withered leaf—the dark brown into which it passes, ere mouldering into dust and death.

The following is a list of some of the deciduous-leaved trees, common in the forests of the Northern States, whose leaves colour beautifully in autumn:—

Tulip Tree (<i>Liriodendron Tulipifera</i>)	Sugar or Rock Maple (<i>A. saccharinum</i>)
Smooth Sumach (<i>Rhus glabra</i>)	Red or Swamp Maple (<i>A. rubrum</i>)
Virginian Creeper or American Ivy (<i>Ampelopsis quinquefolia</i>)	Flowering Dogwood (<i>Cornus florida</i>)
Silver Maple (<i>Acer dasycarpum</i>)	Sour Gum (<i>Nyssa multiflora</i>)
Striped Maple (<i>A. Pennsylvanicum</i>)	Red Bay (<i>Persea carolinensis</i>)
Mountain Maple (<i>A. spicatum</i>)	Sassafras (<i>Sassafras officinale</i>)
	Spice-bush (<i>Laurus Benzoin</i>)

THE OAK FAMILY.

Scarlet Oak (<i>Quercus coccinea</i>)	Water Oak (<i>Q. aquatica</i>)
Red Oak (<i>Q. rubra</i>)	Black Jack (<i>Q. nigra</i>)
Shingle Oak (<i>Q. imbricaria</i>)	Turkey Oak (<i>Q. Catesbæi</i>)
High-ground Willow-Oak (<i>Q. cinerea</i>)	Black Oak (<i>Q. tinctoria</i>)
Live Oak (<i>Q. virens</i>)	Chinquapin Oak (<i>Q. Prinoides</i>)

The foliage of all the Maples changes colour in autumn, the prevailing hues being yellow and different shades of red. In the Red Maple (*Acer rubrum*) the entire surface of the leaf is coloured red, and from this circumstance, the specific character of the tree is taken. The Scarlet and Red Oaks are named especially in reference to the colour of their leaves, which turn to a light red or bright scarlet with the first frosts of autumn. The crimson leaves of the last species, when it abounds, impart a magnificent appearance to the American woods in autumn, blending with the yellow of the Maples, the light brown of the Black Oaks, and the evergreen foliage of the Live Oak, Chinquapin and Turkey Oak.

For the following list of trees remarkable for their autumn-tinted foliage, we are indebted to Messrs. Osborn, of Fulham:—

<i>Ampelopsis hederacea</i>	<i>Crataegus flava</i>
<i>Amelanchier vulgaris</i>	" <i>lobata</i>
<i>Botryapium</i>	" <i>trilobata</i>
<i>Carpinus americana</i>	" <i>cordata</i>
<i>Crataegus coccinea</i>	" <i>Azaronus maroccana</i>
" <i>corallina</i>	" <i>Aronia</i>
" <i>maxima</i>	" <i>orientalis</i>
" <i>acerifolia</i>	" <i>sanguinea</i>
" <i>glandulosa</i>	" <i>tanacetifolia glabra</i>
" <i>subvillosa</i>	<i>Diervilla canadensis</i>
" <i>punctata rubra</i>	<i>Fraxinus discolor</i>
" <i>stricta</i>	" <i>platycarpa</i>
" <i>brevispina</i>	<i>Hamamelis virginica</i>
" <i>aurea</i>	<i>Kölreuteria paniculata</i>
" <i>pyrifolia</i>	<i>Laurus Benzoin</i>
" <i>macracantha</i>	<i>Liquidamber styraciflua</i>
" <i>Crus-galli</i>	<i>Pyrus arbutifolia</i>
" <i>splendens</i>	<i>Quercus coccinea</i>
" <i>pyracanthifolia</i>	" <i>palustris</i>
" <i>salicifolia</i>	<i>Rhus glabra coccinea</i>
" <i>ovalifolia</i>	" <i>venenata</i>
" <i>prunifolia</i>	" <i>copallina</i>
" <i>nigra</i>	" <i>suaveolens</i>
" <i>purpurea</i>	<i>Viburnum Lentago prunifolium</i>
" <i>Layi</i>	" <i>cassinoides</i>
" <i>Douglasii</i>	

Remedy for Insect Stings.—It is said that thirty or forty grains of quicklime dissolved in water is a thorough cure for the stings of insects, and far superior to ammonia or any other alkali.

THE ARBORETUM.

LILACS.

LILACS are indigenous to a comparatively limited area in Europe, but they have a wide range in Asia; and, in addition to several distinct species, for the most part well-known and widely-cultivated, our collections have been from time to time enriched by the accession of a large number of splendid varieties, obtained either by hybridising or by selection from garden sports. Some of the sorts are useful for early forcing, and are invaluable for the winter and early spring decoration of the conservatory. The stronger-growing species form symmetrical bushy-headed small trees, when grown with a single stem as standards, the root-suckers (which, particularly in the early stages of their growth, they throw up in great abundance) being regularly removed, and the upper branches being carefully regulated by judicious stopping or pruning, an operation which should be performed as soon as possible after the fall of the leaf in autumn. There are few garden soils in which Lilacs will not grow, and even thrive, though they succeed all the better in such as are deep and rich, with a cool sub-soil; and an occasional moderate allowance of well-rotted manure, pointed in among the roots, is always acceptable.

Syringa vulgaris (the common Lilac) is recorded as indigenous to Hungary and Persia, and has been cultivated in British gardens since 1597. It is naturally a many-stemmed broad bush, varying in height from 15 to 25 feet, according to soil and situation; but when trained as a standard, it makes an extremely handsome lawn or park plant, producing its grand panicles of fragrant lilac flowers about the middle of May, in wonderful profusion. This fine old-fashioned plant, so familiar to all of us, adorning alike the parks of the rich and the gardens of the poor, and forming as it does such a prominent feature in our woodlands, requires no eulogy with the view of commending it to the attention of the decorative planter; its sterling merits render its presence indispensable in every collection or arrangement of ornamental shrubs. As it grows freely, and rarely fails to flower, even amid the disadvantages of dust and smoke in towns, it should never be overlooked in making a selection for planting squares and street gardens. Of this species there are a large number of interesting varieties, of which the following may be noted as very distinct, and, both as regards foliage and flowers, no less beautiful than the parent:—*Alba*, the well-known old white-flowered Lilac; *Noisettiana*, also white, but with larger panicles; *cærulea*, flowers deep blue; *violacea*, a kind with violet flowers; *Charles X.*, purple, panicles very large; *Philemon*, lavender-coloured; *Dr. Lindley*, rich purple, panicles very large; *Triomphe de Orleans*, pinkish purple; *rubra insignis*, dark red; *Duchesse de Nemours*, pale blue, panicles and flowers very large.

S. persica (the Persian Lilac), indigenous to Persia, from whence it was first introduced in 1640. In this country it is perfectly hardy, and forms a neat dwarf bush, of from 4 to 6 feet in height, with numerous slender branches, its panicles of pale-purple sweetly-scented flowers coming out in May or June, in such abundance as almost to hide the foliage. The leaves are smaller than those of any of the other species, somewhat lanceolate in form, and of a dark green colour. This pretty little plant is invaluable for small gardens or shrubberies, growing vigorously in any kind of good garden soil, and in any situation in which a shrub could be expected to thrive; it is, moreover, one of the freest of early forcing shrubs, and forms a charming object for winter conservatory decoration. Of varieties, *alba*, with pure white flowers, and *laciniata*, with leaves more or less deeply pinnatifidly cut, are both quite as hardy and easily cultivated as the parent, and well deserving of a place among the choicest of dwarf shrubs.

S. Emodi (the Himalayan Lilac) is found abundantly on the Himalayan Mountains, and was first sent home in 1836. It is a broad thickly-foliaged shrub of about 10 feet high. The leaves are larger than those of the common species, of an elliptic-oblong form, bright green above and slightly glaucous below. The flowers are light purple, produced, like those of the other species, in panicles, and usually in perfection in May. Though thriving best in a moderately sheltered situation, it is a very hardy shrub, quite distinct in appearance from the others, and ornamental enough for association with the finest of its class, forming a neat standard when properly trained, and very desirable for small lawns as a single specimen.

S. Josikæa (*Josika's Lilac*).—This is indigenous to mountains on the Rhine, and was named in compliment to a lady—the Frau Baronin Von Josika—who discovered it on the Siebenbergen Range in 1830. It forms a handsome bush of about 10 feet in height, somewhat erect in its style of growth. The flowers are of a very deep purple colour, and sparingly distributed over the long panicles. The leaves are similar in size to the common Lilac, but more lanceolate in shape, with a rough leathery texture, and a dark sombre-green colour. Though this plant neither produces its flowers in such

rich masses, or so copiously as the common Lilac and its varieties, it is nevertheless a valuable ornamental shrub, hardly enough for the most exposed situations, and so distinct in appearance, from its peculiar habit and foliage, that it produces the finest effect when contrasted with other shrubs of lighter tints in mixed borders. It thrives best in a deep, rich, and moderately damp soil.

S. rothomagensis (the Siberian, or Rouen Lilac).—As to the history of this shrub there are differences of opinion. Some writers assert that it is a native of Siberia, and a distinct species; others that it is a hybrid raised about the latter end of the last century by M. Varin, the then director of the Botanic Gardens at Rouen, the parents being *persica* and *vulgaris*. [The probabilities seem to be in favour of the latter theory, as in general appearance it is just what might be expected from the blending of the styles of growth, foliation, and flowers of the two species. In any case, the same plant is found in collections both under the name we have adopted and under that of *sibirica*. It was first introduced into our gardens in 1795, and has since been widely distributed, and is well known as one of the showiest, most beautiful, and hardiest of flowering shrubs. Though more robust in its habit of growth than *persica*, it has a general appearance suggestive of a large variety of that species, and is a grand plant either for a shrubby border, or as a close bush for a lawn specimen. It is a capital plant for early forcing—flowering abundantly when in a young state—and easily excited into growth with moderate heat.—*The Gardener*.

The Yellow Wood Cladrastis (Virgilia) tinctoria or lutea.—"This is one of the very handsomest and neatest of ornamental trees," says Dr. Gray in his "School and Field Botany;" and while all who know this tree will agree with him, it should also be added, that it is one which is almost universally omitted from lists of choice kinds. I was reminded of the words of Dr. Gray while standing in the shade of a splendid specimen of it on my lawn, which was a mere whip-handle when planted ten years ago. The Yellow-wood tree is a native of Kentucky and further south, growing on rich hill-sides, but it is also quite hardy throughout the Northern States. In the Cambridge Botanic Garden, near Boston, there is a magnificent specimen of it, planted there more than fifty years ago. When standing alone, this tree assumes a broad round head, with a very graceful outline, being well furnished with slender delicate branches. The bark is of a grey ashen colour, very smooth, not unlike the Beech in this respect; the wood is fine grained, hard and firm, of a pale yellowish colour; hence its common name. The sap of this tree flows as abundantly in the spring from wounds made in the wood, as it does from the Sugar Maple, and it is also decidedly saccharine; but whether sweet enough to make sugar or not, is a point which I think has never been practically determined. The leaves are large, odd-pinnate, rich green, and smooth; flowers, white, or cream-white, about an inch long, and produced in drooping panicles a foot long. My specimen tree bloomed this season the last of May, and while the general appearance of the flowers reminds one of those of the common Locust, still, they are so much larger, and the general character of the foliage and habit of the tree so widely different, no one would be likely to confound the two. The seeds of the Yellow-wood are very similar to those of the common Locust, and grow quite as readily. The tree itself possesses sufficient merit to make it popular; but the masses have not as yet been made acquainted with it, hence its scarcity, even in good collections of other trees.—*Moore's Rural*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Swamp Oak (Quercus palustris).—This Oak, as its name implies, grows more abundantly in swamps and low grounds than elsewhere, but it will thrive in any good rich soil, and its general form, when given plenty of room, is all that could be desired. It also possesses the additional merit of being valuable for its wood, either for fuel or timber. It thrives admirably in England, and we have seen some fine tall specimens of it in Surrey recently.

Beautifying Railway Lines.—During a recent ride over a portion of the Michigan Southern Railroad, we observed new plantings of lines of trees, of the European Larch and the Chestnut. They were mostly growing well. We were informed that the company had planted 240 continuous miles; the trees being 50 feet apart, it would require 125,000 trees of each sort. In a few years they will be worth more than ten times their cost.—*Cultivator*.

The Feathery Tamarix (T. plumosa).—M. Carrière says, in the *Revue Horticole*, "Nothing can be more graceful than this species, which is still rare in spite of the readiness with which it can be propagated. Its numerous slender branchlets, of a glaucous green hue, bear a certain resemblance to the curled plumes of the ostrich (or the white stork), whence its popular name of Marabout. It flowers in August, about the same time as *T. indica*. The flowers, which are disposed in dense erect panicles, have an airy lightness which adds much to the elegance of the foliage, isolated on a lawn or in a large park. *T. plumosa* forms a compact mass of the most pleasing appearance; and is quite as hardy as *T. indica*, and is propagated and treated in precisely the same manner."

THE HOLLYHOCK FUNGUS.

(PUCCINEA MALVACEARUM.)

A TERRIBLE pest—one of the most destructive since the disease which worked such ravages in 1855-57—is at present attacking Hollyhocks and destroying all hopes of fine bloom. It appears on the under sides of the leaves in the form of brown spots that gradually eat their way through to the top, and cause the leaves to shrivel as if withered through the effects of smoke. Its coming is as mysterious as its action is thorough. It settles down on a spot suddenly, and spreads over the whole plant, tainting stock and leaves alike. Not alone does it affect plants growing in the open air; it also appears on the young-struck cuttings in the autumn that are being nurtured in cold frames. It lays hold of the young weakly plants much as it does the vigorous ones in the open ground during the summer. The moisture that prevails during the autumn months makes resistance to the disease less powerful, and the plants die as if stricken down by a pestilence. Last autumn and winter Mr. Chater, of Saffron Walden, lost an immense number of newly-propagated plants, and though he employed sulphur and other remedies, they seemed merely to aggravate the evil. This season I met with one plantation of Hollyhocks that manifested a vigorous and healthy growth till the disease appeared; all the affected leaves were removed, and a good soaking of water was given to the plants; they rallied for a time, but as soon as dry hot weather set in the attack was renewed with redoubled force, and the plants were in a great measure completely destroyed. It does seem as if there was sound sense in the following recommendation, viz., "as soon as the disease appears, do not parley with it, but dig up the plants and destroy them root and branch at once." Mr. Speed, of Cambridge, informed me that the fungus had appeared among his plants there in a most virulent form, and, that after trying several remedies which suggested themselves, with but poor result, he was induced to make a trial of Condy's Patent Fluid, in what is known as the green quality, and used it in the proportion of a large tablespoonful to one quart of water, sponging and washing the leaves with it; a few hours after using it, he was gratified to find, that "it had completely destroyed the disease." A mixture made up of a tablespoonful to one gallon of water was next tried, and the effect was even more rapidly apparent—the pest being instantly killed, while the plants were uninjured. Preference is given by Mr. Speed to sponging over syringing; the latter occasions much waste, and though sponging consumes more time, it is by far the most effectual method of application. Mr. Speed is of opinion that if this remedy be applied in time, the progress of the fungus will be entirely arrested. The same grower is of opinion that when Hollyhocks are planted they should not be crowded together, as the effect of crowding is to intensify the effects of the disease. R. D.

Ants Enemies to Caterpillars.—The *Belgian Official Journal*, referring to the ignorant conduct of those who destroy all kinds of birds and insects indiscriminately, insists on the necessity of children in primary schools being taught to distinguish between useful and noxious insects, and thus to exercise their destructive faculties against the latter only. The writer proceeds to say that the ant, which is very disagreeable and inconvenient in many respects, does excellent service in chasing and destroying caterpillars with relentless energy. A farmer who had noticed this fact, and had had his Cabbages literally devoured by caterpillars, at last hit upon the expedient of having an ant-hill, or rather nest, such as abound in Pine forests, brought to his Cabbage plot. A sackful of the Pine points, abounding in ants, was obtained, and its contents strewn around the infested Cabbage plants. The ants lost no time, but immediately set to work; they seized the caterpillars by their heads. The next day heaps of dead caterpillars were found, but not one alive, nor did they return to the Cabbages. The value of the ant is well known in Germany, and although their eggs are in great request as food for young partridges, pheasants, and nightingales, there is a fine against taking them from the forests. The ant is indefatigable in hunting its prey; it climbs to the very tops of trees, and destroys an immense quantity of noxious insects.

What is Paris Green?—I shall be obliged by your informing me what this compound is, as I find frequent allusion to it as an insect destroyer.—A. [Paris green is a compound of arsenic and copper. We have often spoken of its use and given directions for operating with it. It was first used to destroy the new pest that infests the Potato in America, but since its introduction its use has extended, and it is now employed to kill other insects that infest other plants. It is a very poisonous mixture. The best way of using it is to stir a tablespoonful of the green in a pailful of water, and apply it with an ordinary watering-pot. The poison is not soluble in water, but is only diffused through it, hence it should be thoroughly stirred, and the liquid applied to the plants before it has had time to settle.]

THE INDOOR GARDEN.

ARECA LUTESCENS.

OUR illustration represents one of the most elegant of all Palms, and one of the very best for general decorative purposes, being easily grown and useful in every stage of its growth. When from 1 to 2 feet high it is invaluable for table decoration; and, after it has become too tall for indoor or room decoration, it forms a handsome and effective object in the conservatory or winter garden. Our figure gives a good idea of a well-grown specimen, and shows at a glance its adaptability and elegance when associated with half-hardy Rhododendrons or other plants of less graceful contour and more rounded mass-like forms. The plant is easily obtainable, being grown in quantity in nearly all nurseries, and is well worth a place in every collection. Where seeds can be got they germinate freely in a genial bottom-heat; and, as this kind of Palm is a quick grower, seedlings soon become serviceable plants. A. catechu is a handsome plant, cultivated in all the warmer parts of Asia for the sake of its fruits, which are of the size of a hen's-egg, of a reddish-yellow colour, and with a thick fibrous rind, within which is the seed. This is known under the name of Areca nut, Pinang, and Betel nut, and is about the size of a Nutmeg, but conical in shape, flattened at the base, brownish externally, and mottled internally like a Nutmeg. These nuts are cut into narrow pieces, which are rolled up with a little lime in leaves of the Betel Pepper. The pellet is chewed, and is hot and acrid, but possesses aromatic and astringent properties. It tinges the saliva red, and stains the teeth, and is said to produce intoxication when the practice of chewing it is begun. The effects seem to be as much due to the other ingredients as to the Areca nut. So addicted are the natives to the practice, that Blume tells us, they would rather forego meat and drink than their favourite Areca nuts, whole ship-loads of which are annually exported from Sumatra, Malacca, Siam, and Cochin China. The practice is considered beneficial rather than otherwise. In this country the charcoal of the nuts is used as tooth-powder, for which it is well adapted by its hardness. A sort of Catechu is furnished by boiling down the seeds of this Palm to the consistence of an extract, but the greatest quantity of the drug called catechu used in this country is the production of Acacia catechu. The flowers of the tree are very fragrant, and used on festive occasions in Borneo, where they are considered a necessary ingredient in medicines and charms employed for healing the sick. In Malabar another species, A. Dicksoni, is found wild, and furnishes a substitute for the true Betel nut to the poorer classes. A. oleracea is the Cabbage Palm, which is found in abundance in the West Indies. It derives its name from the bud which terminates its lofty stem. This bud consists of a great number of leaves densely packed, so that the inner ones are of a white colour and delicate flavour, and serve as a vegetable. The noble trees are destroyed for the sake of this luxury; and it is related that in the cavity, formed by the removal of the

"cabbage," a kind of beetle deposits its eggs, from which maggots are produced which are an article of diet much relished by the negroes of Guiana! C.

TROPEOLUM TRICOLORUM.

THOSE who have little greenhouses to keep gay at a season when flowers are scarce, will find this a most useful plant for the purpose; but, in order to have it in anything like good condition, it must now receive attention, and have everything prepared for giving it a fair opportunity for doing credit to the cultivator during the ensuing season. There are several varieties of *Tropeolum* in cultivation, each claiming more or less the attention of those who take a pleasure in growing such

plants, but this is the one with which I have had most experience. Having a few small roots of it, and having taken example from neighbours who grew it to great perfection, I soon increased their number, until I had them in abundance. I first flowered a few roots in 32-sized pots, and having a few small branches of Birch, with the slender tips cut off, I placed one or two, as were required, in each pot, and allowed the plants to grow carelessly about all over these supports; while, of course, at short intervals, whenever any leader required guiding and laying into some desired position, this was done. Seldom, if ever, were any ties required, as their leaves soon twisted their slender foot-stalks round their supports. *Tropeolums* of this class can be trained in various forms, to suit the fancy of the cultivator. The most natural shapes, however, look best. In increasing the number of roots I never, as a rule, adopted the plan of taking cuttings off the young shoots. This system requires much care and a good deal of practice to be at all successful; and I seldom have seen it tried in ordinary gardens. Even some expert propagators have found no small amount of difficulty in getting such cuttings to root. My plan was somewhat as follows, and was, in general, pretty successful:—The soil in which I grew them was well-rotted turfy-loam, with sometimes a small portion of turfy-peat, and, whatever the nature of the soil might be, I added to it about a quarter of



Areca lutescens.

its bulk of good white sand with plenty of potsherds, putting a small portion of Moss or some turfy substance over the potsherds, thus securing ample means of drainage at the bottom as well as porous soil, as roots of this *Tropeolum* are very impatient of stagnant moisture, which soon gives the plants, more or less, a yellowish and unhealthy appearance. Indeed, by way of trial, and to secure drainage, especially after I took to growing them in large pots, I have, in addition to the ordinary good drainage at the bottom, placed up in the middle of the pot two or three handfuls of half-rotted bents off peaty soil. The way I in general adopted to increase the number of roots was somewhat as follows, and whether the pot might be small or large, much the same method was adopted. As I have already stated, the character of the materials generally used was porous, and after I had secured a good many roots and taken to grow them in large pots, I have often

had six or eight good-sized roots in one pot. I filled up the pots much in the usual way, but large pots are best, having two or three side holes at the bottom, thus securing a more uniform and safe means of drainage. After securing clean well-drained pots, of the size required, I proceeded to fill up with soil, as described above, until about two-thirds up the pot was full. Then, however many roots you may intend putting into any pot, place them round at equal distances, and, if a large pot, about 2 inches from the side, of course leaving 6 or 7 inches in the middle, in which the top of some small tree should stand, which they will by and by lay hold on and ramble all over. Having placed the roots in the position desired, I covered them as I filled up the pot with soil, about 1 inch; after which I placed the pots in a cool part of a greenhouse, or into a cold pit, upon coal ashes or burnt clay. These were some inches thick, so as to allow all surplus water to pass away very freely. When they begin to grow they require some attention, so as to prevent the shoots from becoming entangled or matted together. When they had grown some 6 or 8 inches in length, I gently bent the shoots at a joint and buried them in the soil, leaving a few inches uncovered; this operation I kept repeating, gently bending them a few times more, if an increase in the number of roots is required. Of course, I only fill up the soil in the pots to a proper depth from the top, and as I bent these young growths for the last time, I let them incline towards the middle of the pot. In most cases they will make a small root at each bend, and soon lay hold of the stem of the miniature tree, up which, by a little guiding, they soon ascend. The top of a young Larch, when of a close and uniform shape, makes the best support. When potted, I placed them in a cool house, where they had plenty of air, or in a cool pit; but, in either case, they were allowed to stand upon ample drainage. This species of *Tropæolum* does best without forcing. If started in a cold pit, it should be removed to a cool house by the beginning of December. The temperature in which greenhouse plants will grow well will answer for it admirably, and, as the plants of it go on growing, continue to regulate the young shoots so as to give them as uniform a shape and as handsome an appearance as possible. They can be made to come into flower pretty early in the spring, and they will continue in perfection a long time. I have often seen good specimens of them at spring shows some years ago, where they were much admired; but, now-a-days, such plants seldom find their way to exhibitions.

Barnet.

G. DAWSON.

How to renovate neglected Camellias.—I have a number of Camellias which have been much neglected and have made no growth this year. Would you advise me to cut them down now and place them in heat, or wait until spring. I find that one or two are just beginning to break, but the others do not seem to move.—J. G., Croydon. [Reply by Mr. Baines:—The Camellias, the condition of which has just been described, are doubtless weak at the roots, either from having at some time during the winter, or spring, been allowed to get too dry, with, most likely, an insufficiency of moisture in the atmosphere; or through effects produced by the opposite cause, too much water at the roots, by which the latter have more or less perished. The former is the most likely cause, yet continuous neglect and bad treatment in any way will produce the condition complained of. They must on no account be cut down now, or in the spring, nor until the roots are brought into a more healthy and active state; or most likely they will die. The object in cutting back Camellias is to induce a more bushy habit when they have got into a thin straggling condition, but the operation must never be attempted where the roots are deficient or in a bad state. With plants in the condition described, the best treatment is to at once see whether they are dry in the centres of the balls, and, if that be so, to fully immerse them in a tub of water for twelve hours, so as to moisten them through. Attend to their requirements during the winter, by not allowing the atmosphere where they are grown ever to get parchingly dry, even during severe weather, when fire heat is required. Evergreen plants having a large leaf surface, like the Camellia, under such conditions of the atmosphere, lose more by evaporation than they can withstand. In the spring, as soon as they show signs of growth, keep the house a little closer so as to encourage them to push freely. Syringe overhead, and keep them sufficiently, but not over, watered. Thus treated, they may be expected to acquire invigorated root-action, and a generally better condition. Then, in the following winter, if the plants are thin and straggling, they may be headed back soon after Christmas, and at once placed in

a temperature of 50° at night, allowing a little higher temperature by day. In this they will break freely, and, if well treated, should make two growths before the end of the season.]

A New View of Draining Flower Pots.—Mr. Peter Henderson, who grows hundreds of thousands of pot plants without drainage, writes to this effect in a contemporary:—The question of drainage is not whether plants require it or not; we all agree on that. But the question is in what way the water passes from the pot; whether from the bottom or whether from the sides. We who advocate that the practice of crocking pots is useless, claim that nine-tenths of the escape of moisture is from the sides; they who practice "bottom drainage," would signify by so doing, that, in their opinion the escape of water is mainly from the bottom. If anyone wishes to decide this question for himself, let him take half-a-dozen glazed pots, such as water will not percolate through, let him knock the whole bottom out if he will, and "drain" in the usual way with potsherds, charcoal, or anything else he thinks fit. Let him also take half-a-dozen of the ordinary style of flower-pot. Fill these up with the same soil as used for the glazed pots, but without drainage. Let the same sort of plant be grown in each lot, and under the same conditions of temperature and moisture. Let him note the result three weeks after the experiment has been made, and if he does not find that the glazed pots, with the bottom drainage, show indications of stagnant water in a greater degree than those in the porous pots, then all my observations on this subject have gone for nothing. If I am correct in this, does it not most emphatically prove that the escape of moisture is nearly entirely from the sides of the pot, and not from the bottom, and hence the futility of placing potsherds in the bottom for drainage?

The Old Shrubby Mimulus (*Diplacus*) glutinosus.—This, when well-grown, is a fine plant for conservatory or greenhouse decoration. We recently saw at the Birmingham Botanic Garden, some dense bushes 3 feet through or more, which were literally masses of flower. The plants had received nothing beyond ordinary greenhouse treatment, and were turned out-of-doors with other greenhouse plants as early as possible in the summer, being again brought into the positions required when they reached the flowering stage. The Rev. H. N. Ellacombe, of Bitton, states that with him this plant is as hardy as a Fuchsia—i.e., it dies down in the winter and comes up strongly in the spring; plants that have certainly stood out more than ten years, have this season flowered well. "I am sure," he adds, "that there are many plants of the same sort that would do very well treated in this way—i.e., as herbaceous plants. *Datura sanguinea* is now in flower; it has stood out a dozen or fifteen years; it dies down every winter, and comes up early, and does not seem to be affected by the spring frosts; treated in this way the flowers and foliage are far finer than those usually seen in greenhouses."—*Florist*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Poinsettia pulcherrima rosea-carminata.—This fine variety of one of the most useful of winter decorative plants resembles *P. pulcherrima* as regards foliage, the difference consisting in the colour of the fine-spreading head of bracts, which are of a brilliant rosy-carmine hue. In one specimen which has come under our observation, the crown of coloured bracts measured 15 inches across; the inflorescence first branched trichotomously, and then each of these branches was forked. The number of bracts displayed on these six ramifications was forty-five, all perfect in form, and pure in colouring, the larger ones measuring 7 inches in length, and upwards of 2 inches in breadth. The bracts are much smoother and flatter than in the old form, and spread out so as to form a fuller and more regular crown.

The Best Cool Orchids.—I shall be glad of the names of the best cool Orchids that may be grown in a combination Orchid and greenhouse, sufficiently heated to keep out severe frost.—E. W., Liss. [*Odontoglossum grande*, *O. luteo-purpureum*, *O. Alexandræ*, *Cypripedium insigne*, *C. barbatum*, *C. villosum*, *C. caudatum*, *C. Lowii*, and *C. Schlummi*, *Oreogyne cristata*, *Cymbidium Mastersii*, *Dendrobium nobile*, *Lælia autumnalis*, *L. albidia*, *Oncidium leucophilum*, *Maxillaria Harrisoniæ*, *Lycaste Skinneri*, *Masdevallia Lindenii*, *M. Harryana*, *M. Veitchii*, *Lælia purpurea*, *L. majalis*, *L. acuminata*, *Zygopetalum maxillare*, *Z. Mackayi*, *Angulosa Clowesi*, *A. unicolor*, *Calanthe veratrifolia*, *Pleione lagenaria*, *P. maculata*, *P. humilis*, *P. Wallichii* (præcox), *Maxillaria venusta*, *Oncidium cucullatum*, *O. macranthum*, *O. serratum*, *O. zebrium*, and *O. tigrinum*.]

Propagating Indian Shot and Castor Oil Plants.—What is the best method of propagating these, and how should they be treated when taken out of the flower-beds in autumn?—GAWKAR. [When taken up in autumn, Indian Shot or Cannas should be placed in any dry situation where they will be protected from frost during winter. About the middle of March the tufts should be divided into as many pieces as contain strong eyes; these should then be potted and placed in a gently-heated house for a week or two, when they should be gradually hardened off by exposing them more freely to air. The Castor Oil plants (*Ricinus*) when cleared off the beds, should be conveyed to the rubbish-heap, and young plants raised afresh from seeds, which should be sown on a gentle hot-bed in February. As soon as the seedlings are strong enough to handle they should be potted off singly into thumb or small 60-sized pots; and, as soon as they fill these with roots, they should be shifted into larger-sized pots, and they will become strong plants by the middle of May. If Cannas are sown early in February, and pushed on in heat, they make large plants in 6-inch pots before the beginning of June, and the same applies to Castor Oils, which can also be sown in autumn, and, wintered in a small state in a warm greenhouse, make fine plants the following season.]

THE KITCHEN GARDEN.

POTATO CULTURE IN MARKET GARDENS.

LONDON market gardeners only grow early sorts of Potatoes for sale, late kinds, if any are grown, being only for private use. The varieties which they cultivate for market consist chiefly of Ashleafs, particularly Myatt's, Lapstone Kidney, Dalmahoy, Regents, and similar kinds. Young Potatoes from Nice appear in our markets soon after New Year's day, and shortly afterwards they are supplied from Algiers and the south of France. These early Potatoes, which are not of the best quality, are sold in 1 lb. punnets at from 1s. 6d. to 8s. per punnet, according to their quality and the earliness of the season. About Christmas and New Year's day, may be also observed in fruiterer's windows, little punnets of what are termed new Potatoes, which may be bought for 1s. and 1s. 6d. per punnet; these are the produce of tubers kept from sprouting till July, when they are planted. Haulm soon afterwards appears and tubers are formed; but the frost overtakes them long before the latter become firm or ripe; the haulm is then cleared off, and the ground is mulched with litter; about Christmas time these immature Potatoes are dug up, and after being steeped in water in order to soften them, they are exposed for sale labelled "New Potatoes." The ground selected for Potatoes, if an open quarter, is usually the dryest and lightest at command, as in such soils, the crop comes to maturity sooner than it otherwise would do, and tubers raised in such soils are of the best quality. Mr. Myatt, of Deptford, a great grower of Potatoes, plants them in rows 2 feet apart, the ground being previously manured and trenched, and levelled down with the plough. Planting takes place as soon after the middle of February, as time and convenience will permit. Mr. Jessop, of Chiswick, on whose ground I have seen splendid Dalmahoy Potatoes, plants in drills $2\frac{1}{2}$ feet apart, and about 18 inches set from set in the rows; and, being planted in March, they are in excellent condition for use in August and September. Mr. Dancer, of Little Sutton, and others, plant two rows of Potatoes between their lines of Gooseberry and Currant bushes, which are 6 feet apart, and partially under the shade of large fruit trees, and when fruit bushes do not occupy this position the Potatoes are planted in continuous rows about $2\frac{1}{2}$ feet apart, just as they would be in open fields. Some market gardeners loosen the soil between the rows of their spring Cabbages in March with a steel fork, *i.e.*, if the ground had not been trenched before planting it with the Cabbages, and therein plant Potato sets with a dibber. When the Potatoes appear above ground the Cabbages are removed for market; therefore, little or no injury happens to either crop, and, as soon as the Potatoes get up a little and some earth is drawn to them with a hoe, the intervening space, if hard, is loosened with a fork, and again planted with Brussels Sprouts or early sprouting Broccoli. Before these can do much injury to the Potatoes, the latter will be ripe, when they may be lifted at once for market, or kept for seed or home consumption. In cases in which Potatoes are grown in the open fields, a crop of Lettuces may be got from between them, but after these are removed it is not considered advisable to plant anything else, particularly if the crop is to be sent to market. No sooner are the tubers all lifted, than the haulm is collected and carted to the manure heap; and the ground is then manured, or not, according to circumstances, and ploughed or dug over, when it is ready for Cabbage sowing, Colewort planting, Leek transplanting, or, for sowing with winter Onions; or it is used for Spinach, Radishes, Turnips, or late Celery. The summer culture consists in merely hoeing and keeping the crop rigidly clean. Potato crops are always earthed up, an operation which is done by means of broad iron hoes, or double moulded horse-ploughs, and they are, as a rule, lifted with forks, but sometimes by the plough, which performs the task more expeditiously. The tubers being collected and sized, are put into bushel and half-bushel baskets and are covered with haulm, which is held in its place by means of a few twigs of Hazel. These baskets are then piled one above the other on waggons and sent to market.

F.

VARIETIES OF LEEKS GROWN FOR MARKET.

THERE is an extensive demand for Leeks during the autumn and winter months. The varieties usually grown in market gardens, are the London Flag, a tall thick-stemmed sort, with broad leaves, and the Musselburgh, which is not unlike it, but which has a longer neck, and, being hardier than the London Flag, is more suitable than it for the main winter crop. The first sowing, for which the London Flag is used, is made in a frame on a gentle hotbed in the last fortnight in January or first fortnight in February, or it may be delayed until a frame can be emptied of Lettuces, a crop generally grown in that way. The hotbed is made by casting out a 5 feet wide trench 18 inches deep, and any convenient length, filling it with fermenting manure, over which the frames are placed. A few inches deep of soil are put inside and levelled; the seeds are then sown thickly, and covered by sifting some soil thinly over them. The sashes are replaced and tilted up a little, both night and day, if the weather is fine; but, if windy or frosty, they are kept shut, and a mulching of litter is put over the glass, if necessary, for protection. After the seedlings have appeared, covering at night is continued, but the frames are ventilated more or less during the day, if the weather is at all favourable. Weeds are kept in check, and where the Leeks are too thick they are thinned before planting out time has arrived, which is usually about the end of March or early in April. The first outdoor sowing is made about the middle of February, or as soon after that time as practicable, and is succeeded by another a month or six weeks later; a late sowing being made in the last week in April or in May. For Leeks, the ground is well manured, and they sometimes occupy it alone, but more frequently Lettuces are planted between the rows of Leeks. The ground having been well manured and deeply and loosely dug, lines are drawn as for Peas, about 10, 12, or 15 inches apart, and in these the Leeks are planted from 6 to 7 inches asunder. The first hoeing after planting fills up the little drills considerably, and the second one almost entirely closes them; thus, not only are the plants a little protected at first by being in the drills, but the hoeing earths them up, and causes them to have long white necks; besides, should the weather be dry at planting time, the little drills retain water better than partly-closed holes on a level surface. Between the wider rows Lettuces are planted, and are sent to market before the Leeks are fit for use. Instead of intercropping between all the rows of a plantation formed of Leeks from the latest sowing, only every alternate second or third alley is cropped. I have seen Leeks planted between Asparagus beds, lines of Beet and Parsley, and, in Mr. Dancer's grounds, between rows of Strawberries. Mr. Dancer, however, stated that want of space alone induced him to plant Leeks in such a situation, and asserts that Strawberries should never be intercropped. By the end of July or the beginning of August the produce from the first sowing is usually marketable, and it does not pay the grower to keep it on the ground longer, as, during the extra time it occupies the ground after being fit for use, a crop of Lettuces, Spinach, or Radishes might be taken from it. Leeks for market are stripped of their outside leaves, and the roots are washed, and tied up into fan-shaped bundles consisting of six or eight heads. Some of the finest examples of the middle or main sowing are usually marked (by inserting pegs alongside of them) and kept for seed-bearers. When the field is cleared, these are lifted and planted in some sheltered corner, where they are allowed to bloom and ripen their seeds. W.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Duke of Edinburgh Cucumber.—We have been cutting this 32 inches long, and of tolerably good shape and flavour. Still, for usefulness there is nothing I find like true Telegraph, from which twice as many fruit is obtained. The Duke, however, is better than the Marquis of Lorne, which with me is decidedly an inferior kind.—R. GILBERT, *Burghley*.

A Plea for the Crow Bar.—I would strongly advise Cabbage growers to lose no time in pricking out their plants, in order that they may gain strength to enable them to stand the winter. Immediately the Onions are off the ground, it should be hoed, raked, and, without any digging, holes should be made in it with a crow bar, and the plants washed in with a thorough soaking of water. By adopting this plan, all the Cabbage is ready to cut at one time, and, by clearing out any single row, and planting Scarlet Runner Beans, you will find the Cabbage retained a great shelter to the Beans.—R. GILBERT, *Burghley*.

THE HOUSEHOLD.

THE USES OF THE APPLE.

THE Apple comes nearer to universal uses than any other fruit of the world. Is there another that has such a range of season? It begins in July, and a good cellar brings the Apple round into July again, yet unshrunk, and in good flavour. It belts the year. What other fruit, except in the tropics, where there is no winter, and where there are successive growths, can do that? It is a luxury, too. Kinds may be had so tender, so delicate, and so refreshing, that not the Pear, even, would dare to vie with it, or hope to surpass it. It may not rival the melting qualities of the Peach, eating which one knows not whether he is eating or drinking. But the Peach is the fruit of a day—ephemeral; and it is doubtful whether one would carry through the year any such relish as is experienced for a few weeks. It is the peculiarity of the Apple that it never wearies the taste. It is to fruit what wheaten bread is to grain. It is a life-long relish. You may be satisfied with Apples, but never cloyed. Do you remember your boyhood feats? I was brought up in a great old-fashioned house, with a cellar under every inch of it, through which an ox-cart might have been wheeled after all the bins were full. In this cellar, besides Potatoes, Beets, and Turnips, were stored every year some hundred bushels of Apples—the Rhode Island Greening, the Roxbury Russet, and the Spitzenberg; not daintily picked, but shaken down; not in aristocratic barrels set up in rows, but ox-carts full; not handled softly, but poured from baskets into great bins, as we poured Potatoes into their resting-place. If they bruised and rotted, let them. We had enough and to spare. In all my boyhood I never dreamed of Apples as things possible to be stolen. So abundant were they, so absolutely open to all comers—who went down into the cellar by the inside stairs instead of the outside steps—that we should as soon have thought of being cautioned against taking Turnips, or asking leave to take a Potato. Apples were as common as air. And that was early in December and January; for I noticed that the sun was no more fond than I was of staying out a great while on those Litchfield hills, but ran in early to warm his fingers, as I did mine. Cloyed with Apples? To eat an Apple is to want to eat another. We tire of Cherries, of Peaches, of Strawberries, of Figs, of Grapes, but never of Apples. Nay, when creature comforts fail, and the heart—hopeless voyager on the troubled sea of life—is sick, Apples are comforters; or, wherefore is it written:—"As the Apple tree among the trees of the wood, so is my beloved among the sons. I sat down under his shadow with great delight, and his fruit was sweet to my taste. He brought me to the banqueting house, and his banner over me was love. Stay me with flagons"—undoubtedly of cider!—"comfort me with Apples, for I am sick of love."

If this is the cure of love, we may the better understand why the popular instinct should have resorted to the Apple tree as a cure for ambition, singing—

We'll hang Jeff Davis on a sour Apple tree.

There is, in this toothsome-ness of the Apple, together with its utter harmlessness, a provision for nurses and mothers. There is a growing period, when children are voracious. They must be filled; and it is a matter of great account to know what to fill them with. If you give them but bread, that seems meagre. Pies, cakes, and sweetmeats, are mischievous; and yet more so are candies and confections. Apples just hit the mark. They are more than a necessary of life, and less than a luxury. They just stand half-way between bread and cake, as wholesome as one and as good as the other. But now I enter upon the realm of uses, culinary and domestic, where, were I an ancient poet, I should stop and invoke all the gods to my aid. But the gods are all gone; and next to them is that blessing of the world, the housewife. Her I invoke, and chiefly one who taught me, by her kitchen magic, to believe that the germ of civilisation is in the art and science of the kitchen. Is there, among fruits, one other that has so wide a range, or a range so important, so exquisite, so wonderful, as the range of the Apple in the kitchen? First, consider it as a fruit-vegetable. It might with great advantage take its place

upon the table as regularly as the Potato or the Onion. Far more odorous is the Onion, but, I think, far more blessed is the Apple. It is an admirable accompaniment of meat, which always craves a piquant acid for relish. We do not use the Apple enough in our cooking. As a fruit upon the table it may be used for breakfast, for supper, for dessert. Roasted Apples! Baked Apples! What visions come before my mind! Not the baked Apples of the modern stove, which has humbled their glory. They are still worth eating, but they have lost the stature, the comeliness, and the romance of the old roasted Apples, that were placed in due order between the huge hand-irons, and turned duly by the careful servant, drinking in heat on one side and oxygen on the other, and coming to a degree of luxurious nicety that will never be attained till we go back again to the old fireplace. It was a real pleasure to be ill—I mean on the hither border of sickness—so that we might not go to school, and so that, while we took a little magnesia, we might feast on delicious roasted Apples. And as for baked Apples and milk, how can I adequately speak of the most excellent dish? Then, again, the Apple may be regarded as a confection, serving in the form of tarts, pies,—blessed be the unknown person who invented the Apple-pie. Did I know where the grave of that person was, methinks I would make a devout pilgrimage there, and rear a monument over it that should mark the spot to the latest generations. Of all pies, of every name, the Apple-pie is easily the first and chief. And what shall I say of jellies, dumplings, puddings, and various preserves, that are made from the Apple? It might seem hard, in this enumeration of the many forms in which the Apple is made to contribute to the benefit of mankind, not to notice that form in which it defies age: I refer to the dried Apple. No festoons are more comely than were those half circles that used to decorate the rafters of the old-fashioned kitchen. I confess that no dried fruit is worthy to be called fruit, whether it be Huckleberry, or Peach, or Pear, or Apple. Once dried these things have lost the soul of their flavour; and no coddling, no soaking, no experimenting will ever bring them back to what they were in their original fresh life. Next, we naturally consider the use of Apples as food for stock—for swine, for horses, and for cattle. This use of them is known; but, it seems to me, that they are not thus employed near so much as their benefits would justify. Last of all, let me speak of cider; for, although cider has been banished from its former and almost universal position upon the table, it is creeping back again. Not daring to come in its own name, it comes in the name of a neighbour, and is called champagne. But whether it comes in one form or another, it still is savoury of the orchard; still it brings warmth to chilly veins; still it is a contribution to many a homely domestic festival. And though I cannot, as a temperance man, exhort you to make it, I must say that if you *will* make it, you had better make it good! It only remains that I should say a single word on the subject of the Apple as an article of commerce. Whether fresh or dried, it is still, in that relation, a matter of no small importance. The home market is enlarging every year; and as soon as the Apple shall become so cheap that all men may have it, no matter how poor they may be, the market must of necessity have become very much augmented. Many men suppose that as orchards increase and fruit multiplies the profits diminish. Such is not the fact. As the commoner kinds multiply, and the people learn to use them as daily food, the finer kinds will bear proportionally higher prices; and cheapness is one of the steps to profit in all things that are consumed by the community. And I should be glad to see the day when, for a few pence, every drayman, every common labourer in every city, should be able to bring as much fruit to his house every day as his family could consume in that day. We have not merely in view the profits of raising fruit when we exhort you to bestow your attention on the Apple more and more as an article of commerce; we have also in view the social influence which it may be made to exert. I hold that when in any respect you lift the common people up, whether by giving them a better dwelling, by placing within their reach better furniture, or by enabling them to furnish their table better, you are raising them toward self-respect; you are raising them toward the higher positions in society. And every single step of advance in general cultivation, even though it is brought about by so humble an instrumentality as the

multiplication of fruit, or anything else that augments the range of healthful enjoyment among the common people, not only stimulates their moral growth, but, through that growth, gives the classes above them a better chance to grow.

H. W. BEECHER.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

THE value of plants for flower-garden decoration depends, in a great measure, upon the length of time which they will remain in a state of perfection; and, on this account, it is advisable to make a careful inspection of the parterre about the present time, and to make notes of the condition of the various species of plants used therein, and their apparent adaptability for the purposes for which they are intended. A slight falling off may now, doubtless, be perceived among flowering plants generally; while plants grown chiefly for the beauty of their foliage, are now in considerably better condition than they have been at any other time during the present season—beds of sub-tropical plants being now at their very best; and the same may be said as regards beds of ornamental-foliaged *Pelargoniums*, succulents of various sorts, such as *Echeveria metallica*, *Sedums*, and *Sempervivums*; while the different varieties of *Alternanthera* are now assuming the beautiful tints for which they are so remarkable, and which, owing to some peculiarity of the present very exceptional season, have been absent until very lately. The moderate rainfall which we have recently had, together with the cool refreshing night dews, have, to some extent, enabled such species of bedding plants as the dwarf *Ageratums*, *Petunias*, and *Verbenas*, to furnish, to some extent, material suited to the formation of cuttings, and this circumstance should have immediate attention. In ordinary seasons cuttings of such plants would, in most instances, have been already rooted, and placed in the open air to become somewhat hardened before the advent of wintry weather. This, however, has not been practicable during the present season in most localities. It is quite unnecessary, however, to propagate at the present time anything like a large stock of such plants as the *Ageratum*, if a few store pots can be preserved over winter, or even a few old plants from the beds, they will seldom fail to furnish an unlimited supply of cuttings during the following spring. It is necessary, however to keep such plants as the *Alternanthera*, Dwarf *Ageratum*, *Coleus*, and *Iresine*, in a somewhat genial temperature, during winter, and they can hardly be kept in a healthy condition in a temperature under 50°. Any time during next month is sufficiently early to insert cuttings of the various sorts of bedding *Calceolarias*. Allusion has formerly been made to the unfortunate habit to which this family of decorative plants is so exceedingly liable, namely, that of suddenly dying off, without any discoverable cause, and, successful growers of these plants, would confer a very considerable benefit upon many of your readers, were they to state in your columns the names of such varieties as they may have successfully cultivated during the present very trying season, detailing at the same time their method of treatment. The herbaceous border should still be gay with many late-flowering plants, conspicuous among which will be the *Tritoma Uvaria*, *Anemone japonica*, various sorts of herbaceous *Phloxes*, *Asters*, hardy *Fuchsias*, *Helianthus*, *Solidagos*, and *Eupatoriums*. As the flower-spikes of *Gladioli* decay they should be neatly cut off, without, however, injuring the foliage; and, when the stems of the herbaceous *Lobelias* die down it is advisable to remove the roots into the reserve ground, there to be slightly mulched or covered up for protection during the winter; and when they have started into growth in spring they can then be divided and re-planted. Gather seeds of whatever annual flowers may be required, and as soon as this is done let them be at once cleared off the herbaceous border, and replaced by spring-flowering *Stocks*, *Wallflowers*, and other biennial plants, together with spring bulbs of various sorts, which should be all carefully labelled when planted, to prevent them being injured by the digging or cleaning of the border. A few seeds of some of the finest annual flowers should now be sown in the reserve garden; they may be found to be useful for transplanting into the mixed herbaceous border during the spring. Prepare beds for the planting of early spring bulbs, wherever this can be done. But in most cases, such bulbs will have to occupy the beds and borders which are still gay with bedding plants, and cannot, of course, as yet, be interfered with. Recently-budded *Rose stocks* should be occasionally examined, and the tying material should be loosened where necessary, or, in some instances, may be removed altogether. Keep gravel

walks and drives free from weeds, and the litter of falling leaves, &c., and let them also be well rolled after a fall of rain. About this time worm-casts are exceedingly troublesome, and will soon spoil the finest gravel, unless they are carefully removed before they become mixed with it, and to prevent this, as far as possible, they should be picked up by the hand, and a little salt should, from time to time, be thrown upon the surface of the gravel, in order, if possible, to drive the worms away. Mow, roll, and frequently sweep Grass lawns and belts, in order to secure, as far as possible, a close solid green sward for the winter.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Hardy Flowers.

The number of these in flower is weekly becoming less; but, by a little forethought, a considerable amount of bloom might still be maintained. For instance, if a few *Delphiniums*, double-flowered *Pyrethrums*, *Antirrhinums*, *Pentstemons*, and *Phloxes* were cut back very early, they would send up fresh shoots that would now be in full bloom. Herbaceous *Asters* will now rank amongst the chief features of the herbaceous or mixed border, especially such varieties as *Amellus*, *linarifolius*, *versicolor*, *sagittæfolius*, *punctatus*, *Shortii*, *rigidus*, *discolor*, *hyssopifolius*, and others. They should be staked to prevent breakage by wind. The two varieties of the double-flowered *Helianthus multiflorus* are perhaps the most showy of herbaceous plants at present, and fit companions for these are the *Rudbeckia Neumannii*, *columnaris*, *speciosa*, and *purpurea grandiflora*, which are all grand, showy, and free-blooming hardy autumn flowers. *Arundo conspicua*, too, is a fine object, either in the form of isolated specimens on lawns or in borders, and will soon be followed by the more stately *Pampas Grass*, which should receive occasional thorough soakings of water. *Eupatorium purpureum* will be in bloom in the latter part of the month, and looks well planted near ornamental waters, and *Solidagos* will now be beautifully in bloom in our shrubbery borders, and in back lines in herbaceous borders. The hardy *Fuchsias* are, perhaps, the most attractive of September plants, and *Veronica salicifolia*, too, is another plant now in great beauty, as is also the *Tritoma Uvaria*. Amongst the smaller plants that bloom in September may be mentioned *Sisyrinchium convolutum*, a pretty little yellow flower; *Vittadinia triloba*, a Daisy-like blossom, with the good property of keeping long in bloom; *Corydalis capnoides alba*, an interesting white form; the little yellow *Achillea Ageratum*, *Statice* of various sorts, *Linaria alpina*, *Lythrum floccosum* and *L. alatum*, *Anemone japonica*, white and rose; *Japan Lilies*, *Erodium macradenum*, *Bupthalmum maritimum*, *Zapania nodiflora*, *Sedum spectabile*, *Asclepias tuberosa*, and *Cyclamen hederæfolium*. Cut over all decayed and decaying flower-spikes, and remove withered leaves, so as to secure cleanliness. Alpines and other plants in pots should now be looked over, cleaned, re-potted, and placed in cold frames. Transplant *Irises*, and thin the blooms of choice *Chrysanthemums*.

Calceolarias.

Towards the end of the month, frames must be got in readiness for the winter stock of these, no matter whether it be cuttings or old plants that are to be saved. These frames may either be made of wood or turf, and they must be set upon a well-drained bottom covered, a few inches deep, with ashes. Over this put 6 or 7 inches in depth of sandy loam, mixed with a little leaf-soil; and on the surface place half-an-inch layer of pure sand, beating all pretty firmly. No heating material whatever will be necessary in winter, covering the sashes with some protecting material being sufficient. In the last fortnight of the present month, and during any part of October, the cuttings may be successfully put in, about 2 inches apart, and shaded for a little time afterwards. Short stubby laterals should be chosen for propagating purposes, and all should be rejected that have visible flower-buds. Dusting with dry wood ashes now and then is a good preventive of the damp that often proves so destructive to them. Such varieties as thrive best in the locality should be most extensively increased. *C. aurea floribunda* does not do well near London; whilst, in many other parts of England and in Scotland, it is the best of all *Calceolarias*. *Gaines's Yellow* is the sort most cultivated about London; and *amplexicaulis*, too, does even better than it; but its habit is so loose that we want, for general purposes, a variety having a stocky habit, and, if possible, the blooms of *amplexicaulis*. *Princess Helena*, a dark variety, does remarkably well in Lancashire. *Ambassador*, *canariensis*, *Prince of Orange*, *Aurantia multiflora*, *Havelock*, and *Golden Gem* are also good varieties for the flower garden.

Sub-tropical Plants.

These will now be at their best, and looking magnificently, set off, as they generally are, by a ground-work either of brightly-coloured leaves or bloom. *Cannas* are now finely in bloom, and the gigantic, but hardy, herbaceous *Polygonum Sieboldii*, is also now laden with flowers. Among smaller plants now in flower, *Vallota purpurea* is

one of the finest, and it is admirably suited for moderately-sized flower-beds. *Erythrina*s now form conspicuous objects, being in full bloom, and the variegated Japanese Maize, now in flower, has a most effective appearance. Increase the stock of *Ficus*es from cuttings in heat, *Palms* from seed, *Musas* from seeds and suckers, but such annuals as *Tobacco* plants, and others, may be left unsown until early in spring.

Indoor Plant Department.

Lapagerias, which are perhaps the most beautiful inmates of conservatories at present, require abundant, but judicious, waterings, and slight shade from strong sunshine; *Zephyranthes rosea*, a pretty bulbous plant, is now, both in and out of doors, in great beauty, and *Pancratiums*, and even *Crinum*s now in bloom, serve also to decorate the warmer corners of conservatories. *Cyclamens* demand particular attention just now; some of the young ones should be re-potted, and kept either in frames or placed on wood or ashes out of doors, and syringed twice a day. *Cape Pelargoniums* should be re-potted; old plants should be turned out of the pots, the soil shaken from their roots, and should be again re-potted into the same sized or perhaps a less sized pot, according to the strength of the plant, using a compost of good loam and leaf-mould, and a plentiful admixture of river sand. Plants of *Cyperus alternifolius* intended for decoration throughout the winter months should be re-potted in a compost of yellow loam, a little fibrous peat or leaf-mould, some chopped *Sphagnum*, silver sand, and, finally, broken crocks. The plants should then be kept in a moist warm temperature for a time. Plants for the winter decoration of stoves should now receive attention, and among these the old *Justicia speciosa* is one of the most effective. As usually met with, this plant presents a leggy naked appearance, and it is frequently seen in this state where better things might be expected; but this is entirely the result of bad treatment, for the habit of the plant is good, although, like other free-growing subjects, it is apt to lose its bottom leaves and become leggy under bad management. Cuttings of it inserted in sandy soil and placed in a gentle bottom-heat root in a few weeks; and, in order to secure large specimens for blooming after a season's growth, the cuttings should be put in at once, so as to allow of having them rooted and well established in small pots before winter. They should be potted off singly in small pots as soon as they are fairly rooted, and placed near the glass in a moist rather shady part of the stove, or a warm pit, pinching out the points of the shoots as soon as the roots get hold of the soil, and stopping must be attended to during the growing season. In winter, place the young plants in any roomy situation near the glass where the temperature may range towards 50°, and keep them properly supplied with water at the root. About the beginning of March, or as soon after that time as convenient, remove them to where a growing temperature of about 60° is maintained by artificial means, allowing it to rise 10° or 15° with sun, heat, and air. Shortly after placing the plants in heat give them a moderate shift, using about equal portions of good rich turfy loam, peat, thoroughly decomposed cow dung or leaf soil, and sharp sand, well intermixed together. As soon after potting as the roots appear to have started into the fresh soil stop the shoots and tie them nicely out, keeping them well down, which will have the effect of causing the bottom buds to start into growth, and inducing a bushy habit of growth to begin with. As the season advances, and the plants get into free growth, give air freely on mild days, and keep them near the glass. Some of the *Franciscas* will be still in bloom, and also *Gastronemas*, *Gomphas*, *Amaryllis reticulata alba*. The chief beauty belonging to our stoves, however, will be the many noble foliaged plants and fine Ferns which they contain. *Gloxinias* and *Gesneraceous* plants out of flower should be set in cold frames, where they should be kept dry. Some of the *Ardisias* should now be prettily laden with berries; others, particularly *A. villosa mollis*, on the other hand, will be in flower, and the plants should be removed to a drier atmosphere for a time, until the fruit has set, when they may be again placed in a moist heat. The finer kinds of Ferns should still receive a little shade, in order to preserve their colour. Stems of Tree Ferns lately imported should be wrapped round with damp Moss, which not only prevents such a frequent use of the syringe as would otherwise be necessary, most likely to the injury of the surrounding plants, but also obviates sudden vicissitudes of temperature.

Orchids.

The chief work now to be done in the Orchid-house is to keep the plants clean by repeated spongings. The use of the syringe may now, in the majority of instances, be suspended, except in the case of *Cypripedium*s and *Disas*, which are greatly benefited by occasional sprinklings during bright sunny weather. Orchids making their growth should, if possible, be placed in a humid atmosphere and still have a plentiful supply of tepid water at the roots. This is especially applicable to *Odontoglossums*, as *O. Alexandræ*, *O. Pescatorei*, *O.*

nebulosum, *O. Uro-Skinneri*, and other species. The same may be said of *Masdevallias*, as *M. Harryana*, *M. Veitchii*, *M. coccinea*, and *M. Lindeni*, and the strong growing *Oncids*, as *O. macranthum*, *O. zebrium*, *O. serratum*, *O. obryzatum*, and others. All of the above grow best in the cool house, and if the pots in which they are growing be thoroughly well drained it is almost impossible to give them too much root moisture, especially if the weather is bright and open. Leave air on the cool houses night and day, using a little fire-heat on cold or stormy nights, but it must be borne in mind that these plants grow much more vigorously if they are wintered in a cool airy atmosphere. Plants at rest should be carefully attended to with regard to moisture at the root, as there are but very few which ought to become dust dry, as the rest of most *Orchids* is comparative rather than absolute, and this is especially the case with all but a few deciduous pseudo-bulbous kinds, of which *Calanthe* and *Pleione* may be cited as examples. If it is not already done, go through the whole collection and clean every inch of wood or iron-work with soft-soap and water, and re-arrange the plants so as to give each its due share of air and light. Shading may, in most cases, be now removed, unless the canvas rolls up under cover at the ridge of the house, in which case it may remain, as it is sufficiently protected from wet. It is now a good season to look out for a supply of peat, which is all the better for cultural purposes if stacked up under cover for some time before it is required.—F. W. BURBIDGE.

Nurseries.

Glass-houses should now be repaired, if necessary, so as to have them in trustworthy condition throughout the winter. Heating apparatuses should also undergo thorough examination. *Dipladenias* may still be increased by means of layers. One or more plants should be placed in a shady part of the stove; the shoots should then be loosened from the trellises, little pots should be filled with a peaty compost and finished with a layer of silver sand on the surface; these pots should then be placed in such a way that the joints of the shoots may be placed on them and held in position by means of a stone or peg. Under one shoot may be placed several pots, keeping one or two eyes clear between each pot. *Epiphyllums* may now be grafted on *Pereskia* stocks, on which they take freely, and do not require nearly so much attention, heat, or shade, as many other plants. *Camellias* and *Daphnes* may also be grafted in close propagating frames in intermediate houses. Conifers may be propagated by means of cuttings of the young wood; on some, however, a small piece of the old wood is retained. These should be placed in close frames or under hand-lights in cold frames and shaded. *Gloxinias* struck from leaves should be potted off singly as they become well-rooted. Out-of-doors, the training of young fruit trees should still be actively proceeded with. Cuttings of herbaceous plants, lately struck in pans in frames should be potted off singly into thumb-pots, placed in cold frames, and kept well shaded for a time. Seed of all kinds should now be secured; what is ripe should be gathered, and what is not should be placed under the most favourable circumstances for maturation.

Indoor Fruit Department.

In *Vineries* in which *Grapes* are not yet thoroughly ripe the temperature must be kept much the same as directed for the last fortnight. All *Grapes*, which are expected to keep well for any considerable length of time, should be perfectly ripe by the end of this month, for sun-heat begins to diminish in October, and for imparting flavour and finish it far surpasses any kind of artificial heat. Where the wood of Vines to be started early is thoroughly ripe pruning should be proceeded with; cut the shoots clean over with a sharp knife, leaving two plump eyes on each spur. This is a wise precaution at all times, more especially in the case of Vines intended for early forcing, as they are sometimes shy in breaking, and if reduced to one eye, which does not always start, it causes a vacancy which disfigures the symmetrical appearance of the Vine. Where both grow the weakest can be rubbed off, when young, without injury to the Vine. As soon as pruning has been performed have a bottle of Thomson's Styptic, and with it dress the wounds. Prevention is at all times better than cure, and, although Vines may not bleed just when they are cut, they generally do so, more or less, when the sap begins to rise, unless dressed in the way just recommended. Wash the rods and wood-work well with a strong mixture of soft-soap and water. All repairs inside should be done before starting. When all are cleansed let the rods be secured to their permanent positions half-way up, leaving the point to droop down or somewhat suspended; this equalises the distribution of the sap, and induces the buds to break more evenly than they otherwise would do. Remove all the old soil down to the surface of the roots, and replace it with a rich mixture of good loam, ground bones, and a little well-decayed manure; this, brought up to the former level, has a wonderful influence in keeping the roots near the surface, which is a great point gained. As the inside borders

will not have been watered since before the fruit was ripe they will be very dry, and, if well drained underneath (as they should be), give them a good watering, in order that the roots may be in a growing condition before forcing is started. Admit a free circulation of air at all times, and have everything in prime order for a good beginning, which goes far towards securing a successful end. Suckers of Pine-apples should be potted as soon as possible, using good turfy loam only, mixed with a little charcoal; no water should be given until they begin to emit roots. To Fig trees swelling fruit a good supply of weak manure-water should be given, but it should be gradually lessened as winter approaches. Melons are, for the most part, cut, but where there are some yet to ripen additional heat should be given, by renewing the linings, &c. Cucumbers in pits should be well syringed at midday or early in the afternoon. Mushroom beds in pits, cellars, or similar places should be spawnd as soon as their temperature decreases to 85°. Kidney Beans may now be sown in 6 or 8-inch pots, half filled with a good rich open compost, leaving the other half to be made up when the plants come into bloom.—J. MUIR, *Clovenfords*.

Hardy Fruit.

Late Peaches, and Peaches, Nectarines, and Plums, in late cold situations, may now need a little help in the way of glass or fire, where the walls are flued, to hasten and complete maturity. I have seldom seen October Peaches so late as this year. A Salway Peach, beside a tree of ripe Noblesse, hardly seems to have commenced the second swelling; Lady Palmerston is almost a month behind others in exactly the same positions; Walburton Admirable, Late Admirable, Desse Tardive, Princess of Wales, and others of Mr. Rivers's seedlings, are likely to be almost equally late; and, in the north, the common earlier varieties of fruit such as Elruge Nectarines, and Golden Drop and Imperatrice Plums, are likewise late. In all such cases it would be well to apply fire-heat at once. It is much easier to push fruit on now, when helped by the sun, than next month when the sun has but little power. In the heating of flued walls, great care is needful at first. As in running, it is the pace that kills, so in culture of all sorts, it is the suddenness of change that is the source of danger and cause of greatest mischief. The same danger, to a lesser extent, is incident to the covering of wall trees with glass, it should, if practicable, be done piecemeal. The principle I am anxious to lay down clearly (as it is the secret of success in the matter) is the superlative importance of tentative protection, if I may so express it. Gradually and imperceptibly the fruits find themselves led from the outside air to an enclosed atmosphere of superior temperature, and they go on growing without check, and finally finish at an augmented pace. But let the change be sudden, and many fruits will probably drop, and the remainder prove hard and almost worthless. To make up for the deprivation of natural dews and rains, late fruit trees, protected with glass, should be dewed heavily over every morning, for the double purpose of restoring the natural supply of moisture to the trees, and keeping down red spider. Late Peaches and Plums are so valuable for dessert as to be well worthy of more than all the attention one can bestow upon them. Late Pears may often be helped under glass screens to maturity, that otherwise would either not ripen at all, or prove of such inferior quality, as to be useless for dessert.—D. T. FISH.

Kitchen Garden.

Where forced Asparagus is required early—say, by the middle of November—the first bed intended for early production should have the tops cut off, and all weeds and rubbish cleared away, to let in the full force of the sun's maturing influence upon the crowns, so as to prepare them for the application of bottom heat about the middle of next month. Onions, when sufficiently ripened and harvested, should be tied in rather small bunches, about a dozen or so in a bunch, and hung up to the rafters in an open, or, at least, a thoroughly ventilated shed. They keep much better treated in this way than when laid on shelves; and, as frost does not injure them, all they require is shelter from the rains in some well-ventilated building. The earliest sown Cabbages may shortly be planted out, about 18 inches apart each way. This crop with us usually follows the spring-sown Onions. We always heavily manure and deeply cultivate for the latter; and, when they are cleared off, we hoe the ground over deeply, draw drills at proper intervals, and plant the Cabbage plants in the drills. Cabbages are gross feeders; and, where the land is poor, manuring and digging may be necessary; and also in light sandy soils, where the particles of soil rapidly consolidate, deep digging and manuring may advantageously precede every crop. Different soils, however, require different treatment to obtain the best result; and the nature of the sub-soil, coupled with individual experience, must be the guide as to the best course to adopt. I can only say, provided the land had been deeply trenched for the preceding crop, and was in good condition as to manure, the rotation, also, such as Cabbage following

Onions, being a proper one, I should not, in land similar to ours (heavy loam on Oolitic clay), deeply cultivate for Cabbage, as I have always obtained the best results, both as to earliness and productiveness (and especially the former), from planting in firm land. They obtain a firm hold of the soil immediately; and, as a consequence, a rapid but firm growth takes place almost uninfluenced by frost. As soon as the earliest sown Cauliflowers are large enough, they should be pricked out, about 3 inches apart, for the purpose of having short stocky plants for hand-glasses by-and-bye. Draw their roots through a puddle composed of soot and liquid manure, as a check to clubbing where it is known to exist; and it is a beneficial practice to adopt at all times in transplanting any of the Brassica family. A further sowing of Cauliflowers may now be made under glass, in boxes, or in a small frame. Those who depend upon one sowing never stand in so safe a position as where the plan of making several sowings at intervals of ten days or so is followed out, neither in the certainty of a crop, nor yet in what is of equal importance in a private garden—a continual succession. Make a last sowing in the open air of Lettuces. The Tom Thumb is a beautiful little Cabbage Lettuce for sowing now for frame-work by-and-bye. It is very hardy, occupies but little space, and turns in rapidly. The brown Cos should also be sown now for spring planting. A last sowing of Endive may also be made now on a dry warm border. Where Leeks are planted in trenches, the earliest lot should now be earthed up; and, as we may shortly expect a considerable rainfall, all Potatoes that are still in the ground should be lifted and stored as soon as possible, especially if there is any danger of a second growth taking place.—E. HOBDAV.

Cottagers' Gardens.

The principal operations to which attention should now be directed are the protecting of Grapes and the gathering of fruit. The Grapes, which should now be swelling fast, had better be put into small gauze bags, to preserve them from the attacks of wasps, &c., which are now troublesome. With regard to the gathering of fruit, such as Apples and Pears—the sorts that cottagers generally cultivate—great care is necessary to keep them from being bruised. They should be handled like eggs, in order to ensure their keeping. The time when the fruit is ready for gathering is indicated by its beginning to drop of its own accord from the trees, by its parting freely from the stem on being slightly moved, or if, on cutting open one of the fruit, the seeds are of a dark brown colour, it is fit for gathering. In performing this operation, however, the fruit should never be shaken from the trees, as is often done, but it should be all hand-picked on a dry day. In storing it, let it be taken from the basket, and placed where it is to remain with great care; and, if possible, let it be arranged side by side, and not placed one upon another. With respect to vegetables, look over the seed beds, and keep them clear of weeds. Onions, if not already done, should now be dried and stored as soon as possible, in order that the ground may be got ready for other crops. In flower borders, scarlet Pelargoniums are still in fine condition, and I have lately seen in the open ground some noble bushes of Fuchsia Riccartoni loaded with blossoms. This is an excellent border variety; it is a very profuse bloomer, and may be easily kept over winter by covering the root with a little litter or leaf-mould, so as to keep out frost. Herbaceous plants that have done flowering should be cut down, and have their stems removed whenever they become unsightly. Dahlias, on the contrary, still in bloom, should be trimmed and tied up. If the ground is weedy, run the hoe through it, and endeavour to keep the whole as neat and clean as possible.—J. G.

Proposed Opening of Lincoln's Inn Gardens.—A memorial, signed by the clergy, district visitors, and tradesmen of the locality, has been presented to the Benchers of the Society of Lincoln's Inn, praying that body to be pleased to take steps for the withdrawal of the restriction as to access to the Lincoln's Inn Gardens to the general public, and follow the example of the Benchers of the Temple, to throw open the same at stated hours as a place of public recreation. The memorialists draw attention to the fact that, with the exception of the Temple Gardens, there is no open space within the radius of over a mile where the denizens of the crowded courts and alleys surrounding Lincoln's Inn Fields have an opportunity of getting a breath of pure air. The memorialists further urge, that whatever the cost may be, of keeping the gardens in efficient supervision, they consider it should be paid by the Metropolitan Board of Works, and a memorial to that effect would be presented to that body in due course. Lincoln's Inn Fields is the finest city garden in London, and we trust it may speedily be opened to the public. A little good taste, and, say one-twentieth of the sum spent on Leicester Square, would make a garden of Lincoln's Inn Fields of which London might be proud. The trees are already superb; it only remains to dispose

of the turf and ground in a graceful manner, to remove the miserable decaying shrubs which are massed inside the railings (as is the too common practice in London squares), to plant, with thorough preparation, the trees and shrubs that will thrive in the situation, and lastly, and chiefly, to keep out the architect, sculptor, mason, stucco-man, and the rest of them, and see how much could be done in Lincoln's Inn without their aid.

SOCIETIES AND EXHIBITIONS.

AUTUMN EXHIBITION AT THE CRYSTAL PALACE.

THIS exhibition shows a great falling off from those held in previous years, neither flowers nor fruit being well represented. Grapes and Pines were, in one or two cases, of splendid quality, especially those staged by Mr. Coleman. Mr. Potts, and Messrs. Lane & Sons, who had fine clusters of Muscats, for which they are deservedly famous. Superb Pines came from the Royal gardens, Frogmore, and Mr. T. Bond had a good Queen, which was only 2 ozs. short of 7 lbs. The classes for Gladioli were not so well contested as usual, but excellent stands came from Messrs. Kelway & Son, Mr. J. Douglas, of Loxford, and the Rev. H. H. Dombrain, the flowers being in fair condition for the season. Mr. Charles Turner, of Slough, staged a collection of Show, Fancy, and Pompones Dahlias, not for competition, to which an extra prize was awarded. Mr. H. Coppin, Rose Nurseries, Shirley, Croydon, sent a nice stand of cut Roses, to which a similar award was made. Messrs. Downie, Laird, & Laing, of Forest Hill, sent a charming group of dwarf Palms and ornamental foliage plants, which deservedly obtained an extra prize.

Fruit.—Excellent collections came from Mr. W. Coleman, gardener to Earl Somers, Ledbury, and Mr. Bannerman, gardener to Lord Bagot, Rugeley. The first named exhibitor had a good Queen Pine, Black Hamburgh and Muscat Grapes, Victory of Bath (Gilbert) Melon, Peaches, Nectarines, and an excellent dish of brown Turkey Figs. Mr. J. Deuxberry, Mr. Neighbour, and Mr. O. Goldsmith, also obtained prizes for fair collections. The best Pines came from Mr. T. Jones, of Frogmore, who had four fine smooth Cayennes. Mr. J. Coulter, gardener to E. J. Baker, Esq., Haydon Hall, Pinner, was second with excellent fruit of the same variety, Mr. R. Plummer being a good third. Mr. T. Bond, gardener to G. A. Smith, Esq., The Beeches, Weybridge, was first with a Queen Pine, the weight of which we have already given. The Veitchian fruit exhibition at South Kensington showed what good prizes will do, and it is useless to expect gentlemen or gardeners to cut their best fruit when it is worth at least twice the sum offered as a prize. Large clusters of Black Hamburgh came from Mr. Coleman, who deservedly took the first award. Mr. Potts, gardener to Sam. Mendel, Esq., Manley Hall, near Manchester, was second with good examples of Madresfield Court. Messrs. Lane & Son were first for Muscats, while those staged by Mr. Coleman, although by no means so fine, had the advantage in being more perfectly ripe and better finished. Mr. Cole, of Ealing Park, had large berried clusters, and took the third award. The prize for the heaviest bunch fell to Mr. Bones, who had a double cluster of Black Hamburgh, weighing 5½ pounds. Mr. Bannerman was second with Gros Guillaume (Barbarosa), and Mr. Earp, gardener to J. S. Sellon, Esq., Hume Towers, Bournemouth, was third with a cluster of Black Alicante weighing nearly 4 pounds. Peaches were very poor, the prizes going to Barrington, staged by Mr. Coleman; Bellegarde from Mr. Bannerman; and Walburton Admirable from Mr. Holliday. Mr. Goldsmith took first award for Pitmaston Orange Nectarine, Mr. Coleman being second with Violette Hâtive, and Mr. W. Gordon was third with smaller specimens of the last named variety. The first prize offered for Melons went to Mr. C. J. Goldsmith, who had Golden Queen. Mr. J. Mayall was second, with a good Victory of Bath (Gilbert); Mr. Chard, of Clarendon Park, Salisbury, being third with Incomparable. Apples were rather below the usual average, but the classes were well contested. For a collection of four dishes, R. Webb, Esq., of Reading, was first with Cox's Orange Pippin, Ribston Pippin, Red Astrachan, and Devonshire Quarrenden. Mr. Holder, gardener to W. Balston, Esq., Maidstone, was second, with Golden and Cox's Orange Pippins, Margaret and Kerry Pippins, both well coloured. Mr. A. Longman, gardener, to E. Lushington, Esq., Maidstone, was third. Kitchen Apples were staged by Mr. Swinnerton, Swanley, Sutton-on-Hone; Mr. Chaff, gardener to Charles Goschen, Esq., Addington, Croydon; and Mr. H. Mandy, the prizes being awarded in the order named. Pears were well represented, the three best dishes coming from P. Gosset, Esq., of St. Saviour's, Jersey. These consisted of Louise Bonne, De Coq, and Bon Chrétien (Williams's). Mr. W. Strong, gardener to H. Xool, Esq., also had good examples of Louise Bonne and Williams's Bon Chrétien. Mr. Jordan had a splendid dish of Grosse Calebasse, weighing nearly 10 pounds; and Mr. Stephenson had a good dish of Beurre Clairgeau in the same class. The prizes offered for flavour went to Louise Bonne, from Mr. Strong, while Mr. Sage and Mr. J. Lane were second and third respectively, with Beurre d'Amanlis and Williams's Bon Chrétien. Plums were of excellent quality, although the number of exhibitors was rather limited. Mr. Coleman takes the first prize, with fine fruit of White Magnum Bonum, Washington, and Jefferson; Mr. Pitts and Mr. Deuxberry being second and third in the order named. A dish of Cherries came from Mr. A. Parsons, Dancesbury Gardens, and Mr. O. Goldsmith and Mr. J. Holder were second and third with fine Morellos. Mr. W. Chisholm, gardener

to R. C. Taylor, Esq., of Broughton Place, Maidstone, was first for a dish of Brunswick Figs; Mr. H. Mandy and Mr. Coleman being respectively second and third, with White Ischia and Brown Turkey. Messrs. Lane & Sons staged fruiting Vines, in pots, to which a first prize was awarded, and Mr. Webb, of Calcot Gardens, near Reading, staged a fine collection of Filberts and Cob Nuts, to which an extra award was made.

Certificates were awarded by the Judges to the following novelties:—

Apple Peasgood's Nonesuch (Brown & Co.).—A fine fruit, either for kitchen or dessert use, and well worth general culture.

Gladiolus Mr. Wilson (Kelway).—A deep lilac-purple flower, flaked with crimson: good spike.

Gladiolus Duchess of Edinburgh (Kelway).—A robust variety, with immense flowers arranged on a stout spike. The colour is rosy-purple, with a white purple striped centre.

Gladiolus La Vésuve (Dombrain).—A fine robust variety, bearing a spike of glowing scarlet flowers, the centre of the segments being inclined to white.

Gladiolus Manfred (Douglas).—A bright orange-scarlet flower, of good substance.

Gladiolus Warrior (Douglas).—A bright scarlet flower, flaked with white.

Dahlias Rob Roy, Pollic, and Warrior (Turner).

THE CITY MULBERRY TREES.

DEGENERATE Drapers! Is it a fact
That the utilitarian cataract

Your eyes has so served to harden,
That you really mean, for a paltry fee,

To disestablish the Mulberry Tree—

Grub up your lovely garden?

A glimpse of green in the City's heart!

A little haven of rest apart

From Mammon's turmoil and trouble!

Pshaw! L.S.D. is the faith we hold

Build over the front with its fish of gold,

So our rental of gold we double.

'Tis the God of the Age, this L.S.D.—

The utilitarian trinity—

Whereof we are all adorers:

And a City Company's bound by its creed

To stick right close to the friend in need,

And scorn sentimental soakers.

So the Mulberry Trees are all laid low,

And there's an end to their golden glow—

The brighter that seemed for its rarity;

And may we ask—or were't better not?—

When the garden is gone and the money is got,

Will it be spent in Charity?

Or will it be spent, City-Company-wise,

In making each dinner a new emprise

For digestion's taxed activity?

What's a fountain fair to a turtle tureen,

Or the greenest lawn to the fat that's green

At a gorgeous Hall-festivity?

For this indeed did our Fathers build?

Was guttling and gorging of each old Guild

The end, if not the beginner?

Did they dream those Mulberry Trees must stoop

To furnish a little more turtle-soup

At the Drapers' magnificent dinner?

Punch throweth not. In those ages old

They feasted well upon well-won gold,

And of charity were not chary:

They lived great lives, and helped their neighbours,

And this was the motto of their labours,

Laborare est orare.

A dinner is good, saith the Prophet Punch,

If not too greedily people munch:

But the diners and money-scrappers

Might feel that a spot of garden-soil,

In the very heart of the City of Toil,

Should have sacred been kept by the Drapers.

—Punch.

Too good to be true.—M. Paraf is said to be the discoverer of a way of doing without rain, if necessary. He knew that the air is full of moisture, and he knew that chloride of calcium would attract and condense it, for cultural purposes. He has applied this chloride on sand-hills and road-beds, on Grass, on all sorts of soil successfully, and he has ascertained that it may be applied in such proportions as will produce the irrigation of land more cheaply and efficiently than by means of canals or other methods of securing artificial irrigation. One of M. Paraf's applications will produce and retain abundant moisture for three days, when the same amount of water introduced by the present method will evaporate in an hour. M. Paraf states that he believes that his preparation will not only produce two blades of Grass where but one now grows, but that it will render possible fields, meadows, and prosperity, where now there is nothing but sand and desert waste.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

PLANTING TO PRODUCE LANDSCAPE EFFECTS.

By JAMES M'NAB, Botanic Gardens, Edinburgh.

PLANTING for landscape effect requires much thought and consideration, and, even with all the care that can possibly be bestowed, it is often extremely difficult to bring out, in an effective manner, the ideas which one is anxious to secure, particularly while operating on a piece of ground newly laid out, and previously unplanted; but with partially planted lands, landscape effects are more readily obtained. On perfectly level ground difficulties often occur which on undulated or sloping surfaces, are more easily overcome. Lands which have been long laid out and well planted, but without any arrangement as to landscape effects, may, in most cases, be looked upon by the casual observer as perfect in their way, while the practised eye of the landscape gardener will pick out many blemishes, and be able to suggest improvements. A change may rapidly be effected if one is empowered by the proprietor with entire control, to root out unsightly and duplicate specimens for the purpose of making clearances, at the same time to bring more prominently into sight some distant trees possessing colour and outline which hitherto had been entirely excluded from view, and here and there planting others of such a nature as will harmonise with those already existing. A great diversity of colour and outline is to be found in the forest and ornamental tree department of all our nursery establishments, but the art of grouping and arranging the various species in the park and pleasure grounds, requires quite as much skill and perception as is generally employed by a landscape painter, so as to have his picture well balanced, at the same time to blend the colours so as to make it pleasing to the eye. When arranging trees for landscape purposes, it should be done, as much as possible, so as to produce effects suitable for spring, summer, autumn, and winter—evergreen trees, such as evergreen Oaks, Hollies, Yews, and Pines, being employed for the latter purpose. It cannot be expected that every portion of a large property can be arranged equally well, but some parts may be improved by judicious grouping or planting in masses, taking care to have undulating edges instead of straight ones, which too frequently prove hard to the eye. It is quite possible to have portions here and there artistically grouped, and, in time, the intermediate spaces can be filled up with fitting trees. Any landscape effects aimed at, ought to be made to tell from the windows of the mansion-house, or carriage-drive, or from some favourite seat or walk, in the neighbourhood of an artificial lake or pond, taking care, in all cases, to select a good and somewhat distanced background of thick-foliaged trees, as Sycamores, Elms, Limes, Oaks, &c. Occasionally a few Lombardy Poplars will be found telling objects in the landscape, provided they are kept at a distance, and confined to one point—a number of such trees, irregularly dotted about, being anything but pleasing. It is absolutely necessary to remove the tops of Lombardy Poplars, after they have fairly taken to the ground, leaving stems about 4 or 5 feet in height. Numerous leaders will then be produced from the sides of the portion left, and all will be found to assume an upright habit, and in this condition will stand the wind well. Thousands of these now planted throughout the country, assume a free upright habit at once, and although 10 feet in height, leaves are often only seen at the lower part of their stems, or on their summits, the intermediate side branches being often dead; this is probably caused through wind waving, an occurrence to which they are often subjected, and which has a tendency to throw the sap entirely to the top. If cut down, even at an advanced stage, they will break out again, and make good specimens, thoroughly clothed all over. Other upright trees, as Thorns (*Cratægus Oxyacantha fastigiata*), Oaks (as *Quercus pyramidalis* and *Q. fastigiata*), and Elms (*Ulmus fasti-*

giata), will also be found useful for intermediate spaces; and, although a better class of upright trees than the Lombardy Poplar, and equally effective, they should be sparingly used. Weeping trees, such as the varieties of Birch, Elm, Ash, Lime, Willow, Aspen Poplar, Beech, &c., are also very effective, and one or two of each may, now and then, be introduced with considerable advantage—particularly the Birch, its white papery bark being often very telling. In contrast to the foliage of the ordinary dark green trees, a Larch or two coming in contact with them during early spring is often truly beautiful; at the same period the Corstorphine Plane also gives variety to the landscape. When its foliage first appears, it is of a rich golden tint, which continues for some time; but, as the season advances, it assumes the ordinary green hue, and, when standing free, the outline of its top is exquisite. The Golden-leaved Thorn also comes out in spring with a rich yellow hue, which tells admirably, and forms a beautiful contrast against dark-foliaged trees; but, afterwards, it returns to the green colour. Rich spring effects, although often of short duration, but in interesting succession, are also produced by the colours of the flowers of many trees, such as the Horse Chestnuts, Thorns of different sorts, Guignes, Bird Cherries, double-flowering Cherries, Laburnums, flowering Ash, &c. Further on in summer, all the permanent variegated and coloured-leaved trees are exceedingly pleasing when judiciously blended amongst the ordinary green-coloured ones. Of the former, I may mention the variegated Elms, Oaks, Ash, Acer, Thorns, &c.; and, of coloured leaves, the purple Beech, Hazel, red-leaved Acer, golden-leaved Oak (*Quercus concordia*), also the *Pyrus nivalis*, and the white-leaved Willow, particularly the *Salix Regiæ*. *Populus nivea* and *Sorbus vestita* are also interesting on account of their leaves being dark green above and white beneath, thus presenting a singular effect during a slight breeze. Specimens of *Populus nivea*, although useful for landscape effects, are often greatly damaged by wind, on account of the brittle nature of their spreading branches. If well cut or pruned in during their young state, they will afterwards be found to stand the wind better, and become more shapely objects, than when left entirely to themselves. A great diversity is often produced by some of the trees with narrow or peculiar leaves, such as the Fern-leaved Beech, Fern-leaved Elm, cut-leaved Lime, Willow-leaved Oak, and others. Numerous species of trees contribute largely to autumnal effects, the depth of this depending in a great measure on the wood being thoroughly ripened during the previous summer. The Beech, Thorns, Liquidamber, Sugar Maple, and American Oaks, produce more or less the red or scarlet hues, while the *Sorbus*, Birch, Lime, *Pavia flava*, &c., give a yellow tinge. Of fruit-bearing trees, the Mountain Ash and Thorn are the most conspicuous. The various species and varieties of the Service tree (*Sorbus domestica*), are also interesting when in fruit. The fruits, however, no sooner come to maturity than they are cleared off by birds. The Scotch Laburnum (*Cytisus alpinus*) at one time, when its leaves begin to assume the yellow tinge, likewise when covered with fruit, when placed in various positions, is often seen to present a remarkable and rich effect when fully exposed to the rising and setting sun, the pods appearing like golden flowers, particularly when backed by any of our dark-foliaged trees. In most cases, deciduous trees, planted for effect, should stand on Grass, or in clumps with more or less Grass lawn between each. Although this paper gives a tolerable list of trees suitable for landscape purposes, it is far from being complete; too many of one kind in one place, when fully matured, will take away from the effect aimed at. To do this work properly, several plants of some of the kinds may be introduced at first in various places, but removed in time, so as not to interfere with good outlined specimens, planted for pure landscape effects. The great Coniferous group, which now amounts to upwards of 500 species and varieties; of all forms and sizes; of all tints, from the darkest green to rich gold and silver hues, as well as endless variegations, including the various phases which many of the species undergo during the summer, autumn, and winter months, is sufficient of itself to furnish many interesting landscape effects; the dark hue of many of the Pines, forming the background, while the drooping, upright, and coloured varieties, are admirably adapted for intermediate and foreground positions.

NOTES OF THE WEEK.

— WILL no one bring to our market the luscious Water Melons of the south and the west? The small and wretched specimens now in Covent Garden have nothing in common with the true species, which we have never seen in perfection in England. Good Water Melons taste not only of water, but have a delicious flavour, and are almost as bright inside as a blown Rose. We read that one steamer brought 40,000 of them to Boston from one of the more southern states last week. They are sometimes nearly 40 lbs. weight in America, and do quite as well in many parts round the Mediterranean basin.

— THE beautiful, large, and fragrant single Japanese Rose (*Rosa rugosa alba*) has been sent us in fine bloom by Mr. Ware, in whose nurseries, at Tottenham, it is now in flower. It is one of the many single Roses which deserve a place in every garden. The white of the large flowers, opening one by one, is as pure as that of any flower in existence, and the dark green closely-pinnate shining leaves are very ornamental.

— THE freeholder of an almost unknown garden, that in Golden Square, is going to perform a task similar to that of Mr. Albert Grant. This is really a capital movement, which we hope will spread. Of course, there are many of our squares which are to all intents and purposes the private gardens—and the only ones—of the residents, and nobody wishes to interfere with them; but there must be from fifty to a hundred of those enclosures, which are of no use to anyone at present, and might be splendidly utilised as play-grounds for the people, and additional lungs for London.

— BOTH the crimson and white varieties of *Lapageria* are now flowering profusely in a cool corridor in Messrs. Veitch's Nursery at Chelsea, the white flowers mingling with the crimson ones, and producing a charming contrast. Both plants never look better than when planted out in a moist border of peat in a cool and partly-shaded greenhouse or conservatory, in which they are permitted to spread under the roof in a somewhat natural manner. Treated in this way, and liberally supplied with moisture, they grow vigorously, and, as in the case in question, produce hundreds of flowers of both colours, in pleasing yet striking combination.

— IN the *Graphic* of last week is a representation of Anderson's Mummy Pea, a variety apparently identical with Grimston's, about which so much was said some years ago. The latter was considered to be the old Branching Marrow. The stalk of this Egyptian Pea is said to be peculiar. Near the ground it is attenuated, but at the summit it is several sizes thicker, so that it appears a necessity to support it, and the more so as the pods are also clustered together at the head of the plant, instead of being, like the ordinary Peas, distributed along the stalk. Though not pleasant in flavour, these Egyptian Peas are eatable; they resemble grey field Peas. We do not, however, believe in the "mummy" origin of this Pea.

— SPEAKING of the Wellingtonia, Mr. Robert Hutchison, of Carlowrie, says: "The soil and climate of Ireland seem to be peculiarly well adapted for the Wellingtonia, and many instances might be recorded of very handsome and thriving specimens of it occurring in various districts of that country. One in particular is perhaps deserving of special notice here, as being probably at the present time the tallest specimen in the United Kingdom; I refer to the tree at Cecil, county Tyrone, which, although only planted fourteen years ago, is already about 45 feet in height, and growing luxuriantly." From our own observations we should say that Southern England was more suitable for this tree than Ireland. There are certainly taller trees in England than the one in Tyrone.

— AN *American Garden* (monthly) has been started in Brooklyn; it is edited by Mr. Hogg, a well-known and able horticulturist of English descent. He remarks, in the first number, that "unfortunately for the art of gardening in America, the journals are, however, for the most part, filled with extracts from foreign papers. The practices therein recommended, owing to differences of climate and other reasons, are not adapted to our necessities, and can only be made useful by the valuable hints and suggestions which they convey to persons of otherwise large experience. On the other hand, the articles of home production are generally the work of persons whose reading and practice have been too limited to afford the qualifications needful for giving instruction. Hence, too often, they contain that which is empirical and exploded in practice, and, not unfrequently, lead those who adopt their suggestions to grievous disappointment. There are, in all the country, but four periodicals which are devoted exclusively to horticultural and floricultural objects; and two of these confine their attention, mainly, to the interests of professional men, and have but little circulation in the larger circle of amateurs." We do not acknowledge the force of these observations in full, as much of the horticultural and rural literature of America is remarkable for complete knowledge of the subject, lucidity and point in

expressing that knowledge, and not unfrequently for an abundance of excellent illustrations which make the writers' meaning on every point clear at a glance. Mr. Hogg is a horticulturist of much taste, and we hope his new paper may live and advance the art in the New World.

— THE finest of all blue conservatory wall or pillar plants, *Plumbago capensis*, is now flowering freely as an edging-plant in the London parks.

— *ONCIDIUM ZEBRINUM* is now in flower in Mr. Salt's fine collection of cool Orchids, at Fernhurst; its spike is 10 feet in length, profusely branched, and bearing in all 240 flowers, each measuring half or three-quarters of an inch in diameter.

— *TRITOMA MACOWANI*, a new species, is just now in flower in a cool house at Kew. It is in a pot, and owing to its dwarf habit, it seems well-suited for pot-culture. Its blooms are of a paler colour than those of the commonly grown *T. Uvaria*.

— AT the Botanic Garden, Oxford, the Mexican *Dasyliroon arcotrichum* recently threw up a flower-stem which, when 12 feet high, grew at the rate of 6 inches in twenty-four hours. The *Nelumbium speciosum* (the Sacred Bean) is reported this season as producing perfect seeds.

— *Galignani* states that the vintage has commenced in the different Vineyards of the Orléanais, and gives excellent results. The wine is expected to be of good quality, and in certain places will realise in quantity more than the cultivators expected.

— WE have received from Messrs. Lamoureux & Co., of Plymouth, specimens of their new hybrid *Amarantus Henderi*. It is the result of a cross effected between *A. elegantissimus* and *A. salicifolius*. The plants grow about 18 inches or 2 feet in height, and form perfect pyramids of rich orange, rosy-carmine, and bright green foliage.

— A PLANT of the white-flowered *Maxillaria grandiflora* is now in bloom in Messrs. Low's nursery, at Clapton. In habit it is something like *M. venusta*, but bears much larger snow-white long-petalled flowers, the lips of which are stained with lemon-yellow and streaked with deep chocolate beneath. It is a beautiful Orchid, rarely seen in collections.

— ONE of the many valuable results of the work of the United States Geological Survey of the Territories, is a "Synopsis of the Flora of Colorado," by T. C. Porter and J. M. Coulter. It is a very interesting region to the plant lover, and we hope the work may bring the knowledge of the subjects down to the latest explorations.

— CONSPICUOUS among rock or border plants in bloom at the present time, is *Pentstemon breviflorus*, a distinct yellow-flowered species, with foliage resembling that of the narrow-leaved Myrtle. It forms a neat dwarf bush, which, viewed from a distance, looks like a dwarf species of St. John's Wort. This plant may now be seen in flower at the Hale Farm Nursery, Tottenham.

— THE fine collection of Orchids, formed at Farnham Castle, by the late Bishop Sumner, was sold this week at Stevens'. For one of the most remarkable plants which it contained, viz., *Dendrochilum filiforme*, £25 4s. was obtained, and a fine plant of *D. glumaceum* realised £14 3s. 6d. A plant of *Angraecum eburneum superbum*, which, last year, bore sixty-four blooms on five spikes, fetched £24 3s. Others brought from £3 to £10 per lot.

— AMONG the most attractive plants in the Gardens of the Royal Horticultural Society at South Kensington, are the Hydrangeas, which are now in full flower. They succeed well planted out in the shrubbery borders, and flower profusely every autumn. In some parts of England and Ireland, near the coast, the Hydrangea is one of the finest of all summer and autumn flowering shrubs, often forming specimens 30 or 40 feet in circumference and 6 or 8 feet in height. In many of the southern counties the Hydrangea also grows well, planted in clumps or masses on the margins of walks and shrubbery borders, and if cut down during exceptionally severe winters, it rarely fails to push up from the root the following spring.

— SOME of our contemporaries are afraid that if Trafalgar Square were to be laid out as a garden, it would soon lose its freshness and beauty. No fear need be entertained on this head, however, if the work be carried out by a practical landscape gardener, who understands the beautifying of city spaces, and comprehends the use of the wealth of vegetation which will succeed in such situations. We could point to lawns in many town gardens as fresh and as green as any in country districts, while the choice of trees, need not, by any means, be limited to Planes alone, although, undoubtedly, the Plane is the finest of all town trees. The Temple Gardens are in a far worse neighbourhood than Trafalgar Square, yet, here we have fine Catalpas, Poplars, and other trees, and as fresh a breadth of cool green turf as anyone could desire; while here we have been taught how to get a glimpse of bright colour and floral beauty in city gardens even during the dullest part of the year.

THE FRUIT GARDEN.

SMALL VERSUS LARGE POTS FOR PINES.

IN answer to "A Pine Grower's" remarks (see p. 244), I have only to say that the system of growing Pines in small pots is one fairly established here, and, therefore, my statements in reference to it cannot be regarded as "wholly unsupported either by theory or practice." We sometimes cut two dozen fruit here in one day, and we find that those cut from plants grown in 10-inch pots invariably outweigh a corresponding number cut from plants in 12-inch pots. One important consideration with regard to Pine plants in small pots is the readiness with which they can be got to fruit—a difficult matter with many. Pine growers, as a rule, like fine-looking plants; but, from such stock, fruit is seldom obtained when desired, and when it does come it is hardly ever proportionate in size to that of the plant which produced it. Vigour, to a certain extent, is all very well; but, too much luxuriance is a mistake, a remark which also holds good in the case of Vines, and other fruit-bearing plants which might readily be named. Strong spongy wood, which looks delightfully vigorous, is seldom productive of good results; nothing surpasses firm sturdy growth, of moderate strength, as far as fruitfulness is concerned. Your correspondent speaks of the smooth Cayenne as being a more robust grower than the Queen, and as producing proportionately larger fruits. The stronger growth has, however, nothing to do with the difference in the size of the fruit; it is natural for the one to have smaller fruit than the other. With us, plants of the Queen variety are always stronger, and have more foliage than those of the smooth Cayenne, while the fruit of the former is the smallest. It is precisely the same with the Duchess of Buccleugh Grape, and Gros Coleman. The Duchess is much the stronger grower of the two, and yet the fruit is not half the size of that of Gros Coleman. In selecting large Pine suckers, there is an advantage, inasmuch as the plants sooner get large, than would otherwise be the case, and sometimes they fruit earlier; but I never found the fruit of such plants to be larger than that obtained from plants of which small suckers were originally used. We have a seedling Pine here, which promises to be an improvement on many kinds in cultivation. Corpulent, well-shaped fruits of it, now swelling in 9-inch pots, are already bordering on 4 pounds each; yet the plants have few leaves, the whole (with the exception of the crown) on one plant, which is producing the largest fruit, numbering fourteen. In this case, the secret chiefly lies in the 9-inch pot, which is full of splendid roots, the energies of which are not spent in sustaining a mass of hungry leaves, but, on the contrary, go to support the fruit. "A Pine Grower" remarks that the Providence is a stronger grower than either the Cayenne or Queen, and that it produces the largest fruit of all (?). Lambton Castle Seedling has fewer leaves than any of the three, and yet its fruit is the largest. Pines, now-a-days, are fruited in half the time they used to be years ago; and to what cause may this be assigned? Mainly to the smaller-sized pots in which they are now grown; temperature, soil, and general treatment, being much the same then as now. If we were to revert to the huge pots in which Pines were formerly grown, fruiting would only occur once in three or four years; while the plants themselves would be tall enough to push up the sashes of a 3-feet deep frame.

I have in my time seen abundance of plants of this kind, which would doubtless have gladdened the heart of "A Pine Grower;" but, as to fruits, alas! where were they? "The mere assertion that So-and-So grows his Pines in 10-inch pots conveys no meaning." This may be the opinion of some; but the fact that So-and-So grows his Pines better in 10-inch pots than other Pine growers do in 12, 14, or 16-inch ones is a matter well worth consideration. Your correspondent says he "has an impression" that I refer to some kind of 10-inch pot which holds as much soil as a 13-inch one. I am, however, unacquainted with such pots; indeed, I may say that I have found the pots to correspond with the figures both in England and Scotland. The pots in which we grow Queens have an inside width at top of 9 inches, at bottom of 5 inches, and in depth they are 9 inches. For smooth-leaved Cayennes and the strong-growing sorts we

use pots 10 inches in width at top, 6 inches at bottom, and 10 inches in depth. I consider a 4 lb. Pine large enough, and a size most serviceable for any purpose. Your correspondent seems disposed to disparage market-grown Pines when he says, "it may be better for market purposes to grow more plants and to have a greater number of fruits;" but to this I would answer, what takes in the market is pretty sure to pass unquestioned elsewhere. This is fully confirmed by the fact that many Pines cultivated by market gardeners find their way to the tables of those who grow Pine plants themselves. Two feet apart is sufficient for Pines grown in 10-inch pots, either with or without Vines, or any other dense covering overhead. When Vines are grown overhead it is still more necessary, than when they are grown otherwise, to confine the Pine roots to small pots in order to ensure fruitfulness, and to prevent the plants from getting too much elongated.

Clovenfords.

J. MUIR.

IMPORTANCE OF A GOOD SUPPLY OF WATER.

THE long continued drought, which I trust may now be considered to be at an end, should induce us to look to our late supplies in order that we may be better able to prevent failures in future. I may safely assert that we have given artificial watering a fair trial, and the result is that fruits of all kinds are far above the average; vegetables, too, are of excellent quality; and our floral display is all that could be desired; for brilliant sunshine and a clear dry atmosphere have brought out the different colours in perfection. Foliage plants enjoy, immensely, a short spell of tropical weather, provided their roots are kept moist by mulching and frequent delugings of water. The damping system destroys more plants than even drought unchecked, as watering the surface draws the roots upwards, and the first scorching day completely roasts them, and the plants droop and wither. If proof were wanted that artificial irrigation may be successfully carried out in its entirety, so as to render our gardens independent of the annual rainfall, I would at once point to the triumphs of horticulturists under glass, where an entirely artificial system of watering produces fruits and flowers in perfection. In fact, such a season as the past, with plenty of sunshine, gives us better flavoured and more highly coloured fruits than our usually dull dripping seasons do. Whoever heard of fruits under glass roasting on the trees owing to too much heat, and being small and tasteless, even though they get all the extra heat that glass structures can afford them? The fact is, it is more a question of labour and expenditure than one of skilful culture; the staff of most gardens would require to be doubled before it can be hoped that fruit culture on walls and open quarters will come up to that under glass. When fruit tree borders have been well mulched and soaked with alternate applications of liquid manure and clear water, and the garden engine is kept at work so as to keep the first growth in health and vigour, no fears need be entertained as to the ripening of either fruits or "bearing wood for another year," both important points in fruit culture. On the other hand, during a dry summer, when the trees have to struggle for existence, when autumn rains come, they encourage a rank immature growth, the bloom buds on which are imperfectly developed, and the consequence is failure as regards a crop of fruit. Let us, therefore, before it is too late, look to our water supplies.

JAMES GROOM.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Early Grapes: H. K. S. To ripen Grapes in May, you should start your Vines in November. Your house may not be so light as could be desired, but there is nothing to hinder you from forcing the Grapes as you wish and having them ripe in May. It is desirable to do all early forcing in well-heated and not over large houses.

What Constitutes a Dish of Fruit for Exhibition: H. S. The standard for quantity comprising a dish of fruit for exhibition, as given by the Royal Horticultural Society, is of Grapes three bunches, of Apples, Pears, Peaches, Nectarines, Figs, &c., six fruits; of Strawberries, Cherries, &c., generally fifty fruits.

Pruning Newly-planted Fruit Trees.—Am I right in pruning fruit trees as soon as planted?—W. F. [Young fruit trees pruned back at the time of planting do not succeed so well as those which are left unpruned until the sap commences to move in the spring. Then you can see better the state of the young tree, which will not suffer so much as if it had been pruned soon after being disturbed in the planting.]

THE LIBRARY.

VAN HOUTTE'S FLORE DES SERRES.

THE first quarter of the twentieth volume of this work has at last reached us (many months after it was promised, as usual), and we are sorry to say that it is inferior in interest to any triple part of the work which we have yet seen. It would be more satisfactory if Mr. Van Houtte would desist as much as possible from copying plates from other works, and occupy his space with original plates (which his establishment is well able to produce) of the many fine novelties introduced by his own travellers, and those of other foreign houses, especially in the way of new hardy flowering shrubs, which are not nearly as much or as widely known as they deserve to be, and which well executed portraits appearing in such a work would do much to popularise. The part commences with four well executed double plates of Pears, each containing some twelve or thirteen kinds of these fine fruits, but however interesting these may be to pomologists, we cannot but consider them totally and entirely out of place, and inappropriate for such a purely horticultural work as the "Flores des Serres" professes to be. If Mr. Van Houtte wishes to illustrate these fruits, how much better would it be to publish the plates in a separate or supplementary form, so that those who did not want them, need not have them bound up with their volume, which cannot now be done without rendering the letter-press of the volume incomplete. Plate 9 is a beautifully executed portrait of a lovely bulbous plant from the Andes Mountains, named *Placea ornata*; as it is found in its native mountains at an altitude of 8,000 yards above the sea, it would, in all probability, be quite hardy wherever the Belladonna Lily is able to withstand our winters, or require at most a few inches of litter or ashes to protect the bulbs from severe frosts. The flowers are creamy white, deeply lined with carmine streaks, and are borne, like those of the Belladonna, in umbels of from eight to ten on the top of a tall stalk. Plates 10 and 11 represent one of the handsome foliage plants recently introduced from Brazil, under the name of *Calathea* or *Maranta Makoyana*.

Plates 12, 13, 14, 15, 16, 17, and the woodcuts and letter-press on the intervening pages, are a translated condensation of Messrs. Moore and Jackman's work on the Clematis. The varieties figured in the coloured plates are *Rubella* and *Marmorata*—the former well-known, and the latter a dull and poor variety of little or no interest; *Viticella rubra grandiflora*, a small dull deepish-red variety; and Mrs. James Bateman, a fair-sized flower of a purplish-lilac colour, not much to be admired; and Messrs. Cripp's fine double variety, somewhat resembling a deep-coloured form of John Gould Veitch, which they have named *Excelsior*. Plates 18 and 19 are a reproduction of Messrs. Fröbel's plate of *Begonia octopetala*, sent to them by M. Roetz from the Andes Mountains, and re-introduced by them to European gardens after having been lost to them since 1837, when it was flowered in the Glasgow Botanic Gardens in the stove, which treatment was in all probability the cause of all the tubers perishing. The plate was prepared by M. Fröbel from descriptions sent to him with the tubers; but certainly is not, by any means, a faithful representation of the flower as produced from a tuber received from M. Fröbel, and flowered in the open air by one of our correspondents in the south of Ireland, who informs us that the flowers produced by his plant are quite a size smaller than those in the plate, and entirely without the deep rose-coloured under petal, which adds so much to the beauty of the flower as figured by M. Fröbel. The flower, in reality, much resembles a small white *Anemone japonica*, of a duller shade of colour than that fine hardy perennial, and is quite correctly figured in the *Botanical Magazine*, Vol. LXIV., tab. 3,559, from the specimens flowered at Glasgow in 1836. Plate 20 represents the beautiful *Odontoglossum vexillarium*, so finely figured in Mr. Bateman's "Monograph" of this family, and also in the *Floral Magazine* by Mr. W. G. Smith. Plates 21 and 22 faithfully represent those two beautiful and almost hardy climbers *Lapageria rosea* and its snow-white variety, than which two more beautiful or valuable plants (as they produce their lovely flowers usually all through the dull winter months) could not be trained to the trellis of a conservatory. Plates 23 and 24 are a reproduction of the fine plate of *Lilium Krameri*, given in last year's volume of the *Botanical Magazine*, tab. 6,058, from a specimen furnished by G. F. Wilson, Esq., of Weybridge. Plate 25 represents *Sarracenia Psittacina*, a dwarf low-growing rosy-tipped variety of this family from Georgia. Plates 26 and 27 represent *Cypripedium japonicum*, a fine new hardy species of Lady's Slipper, introduced from Japan by Messrs. Teutschel of Colchester, and somewhat resembling the beautiful Canadian variety, *C. spectabile*, the slipper being white streaked with carmine, and the upper petals green, slightly spotted with light brown.

Since the above was in type, we have received the second triple part, completing half the volume, and we are happy to say that it

far exceeds in interest and in the beauty and novelty of the plants figured in the first quarter of the volume. In fact, we may say that with the exception of the concluding four double plates of the number being again occupied by Pears, the plates, generally, equal in interest and beauty, and delicacy of execution and colouring those of any part of the work that has yet come under our notice.

Plate 1 represents very faithfully that fine hardy border plant *Tropæolum polyphyllum*, with its racemes of large bright golden blossoms; this is much less generally grown than it deserves to be. It is a tuberous-rooted perennial species, with conspicuous glaucous foliage, and of a low growing trailing habit of growth, flowering freely when once established in a bed or border about the mouth of May. Plates 2 and 3 admirably represent a fine addition to our hardy shrubs from the extreme north of Japan, whence a single seed came by chance among some others sent to Dr. Regel by the well-known Russian collector, M. Maximowicz, who sent it unwittingly to Mr. Van Houtte, in whose gardens it germinated in due course, and when inspected by Dr. Regel and Professor Decaisne of Paris, was pronounced by both these learned authorities to be quite a new and unknown variety of the Araliaceous family, and quite distinct from anything already in cultivation. It has been accordingly named after its introducer *Aralia Maximowiczii*, and has been propagated, and is now being distributed, by Mr. Van Houtte. Plates 4 and 5 represent that curious inhabitant of our stoves known under the name of *Mantisia saltatoria*, or Opera Girl, the tremulous upper portions of its flowers somewhat resembling a dancer. It is a native of India, and produces copious heads of flowers of a bluish-lilac shade with a golden lip. Plates 6 and 7 represent a fine seedling *Azalea* raised by Mr. Van Houtte, and named by him John Gould Veitch. This variety much resembles in shape and colour another very fine variety, named *Sigismund Rucker*, also raised by Mr. Van Houtte, and figured in the nineteenth volume of the "Flore," but is said to exceed this variety in the size of the individual blooms; both are exceedingly free flowering. Plates 8 and 9 represent four fine varieties of *Iris Kämpferi* introduced by Von Siebold from Japan, and which bear the names of (1) *Alexandre Von Humboldt*, (2) *Professor de Vriese*, (3) *Alexandre Von Siebold*, and (4) *Souvenir*; they are all perfectly hardy; but require to be well-established and strong plants before they produce their beautiful flowers in any abundance. Plate 10 represents a fine new seedling variety of the Pampas Grass, raised by the well-known French nurseryman, M. Bertier-Rendatler, and named by him *Gynierium argenteum carminum Rendatleri*, and said to be extremely hardy and of an exceptionally tall and vigorous habit, producing freely large heads of deep rose-coloured inflorescence which stand the wind well, and when cut and kept for winter decoration gradually change to a clear violet shade. Plate 11 represents a new and ornamental-foliaged Thorn with leaves resembling those of one of the greenhouse Ferns which originated from seed in Eastern Prussia, and is now being distributed by Mr. Van Houtte under the name of *Cratægus oxyacantha filicifolia*. It is quite hardy. Plates 12 and 13 represent a couple of blooms of the dull leaden-bluish-flowered *Amaryliss*, introduced some time since from the Brazils under the name of *Imperatrice du Brazil*; it requires stove heat, and is extremely difficult to get to flower in this country; and when the flower-head is produced it is more interesting as a rarity or curiosity than for any beauty it can be said to possess. Plates 14 and 15 represent a hardy variegated Araliaceous plant of great beauty, figured under the name of *Aralia pentaphylla* fol. var., but which seems to us most closely to resemble, if it is not identical with, a plant distributed some few years ago by our leading London nurserymen under the name of *Acanthopanax variegata*. Plates 16 and 17 represent the fine gold-margined form of the *Liriodendron tulipifera*, or saddle-leaved Tulip tree, with its curious and ornamental green and orange Tulip-like blossoms, which the tree does not produce in this country till it attains a great age, but which, in the Pyrenees and countries where it is subjected to greater extremes of heat and cold, are freely produced by young sapling specimens. The variegation of this variety is said to be much more evenly distributed, and far more constant than that of the gold-blotched variety already in cultivation, each leaf being evenly margined with bright gold. It originated in France, and the entire stock has been acquired by Mr. Van Houtte, who is now distributing young grafted plants. Plates 18 and 19 represent the fine cool greenhouse climber *Tacsonia insignis*, sent to Messrs. Backhouse, of York, from Peru, by Mr. Yarborough Greame, and figured in last year's volume of the *Botanical Magazine*, by Dr. Hooker, tab. 6,069, of which plate this is an admirable reproduction.

With the exception of the four double plates of Pears before alluded to, this completes our notice of this instalment of this interesting work. We suppose that some time will elapse before another number reaches us.

W. E. G.

ROBINIAS.

AMONG plants introduced from the New World, the Robinia, or False Acacia, stands in the front rank. It accommodates itself to the most varied conditions of soil and position, grows fast, particularly when young, and rapidly reaches full development, when its stateliness and beauty make it one of the most valuable of trees either for the ornamentation of streets and avenues, or for parks. Its pretty greenish-yellow marbled wood is, sometimes, employed in the manufacture of ornamental furniture both in this country and on the Continent, and in America it is largely used for posts and rails, for which it is found to be well suited. The tree, of which the accompanying illustration is a representation, is one of the oldest in Europe. It was raised from seeds received from North America, by Professor Robin, and was planted in the Jardin des Plantes, at Paris, by M. Vespasian Robin, in 1636. About this time,

too, seeds of this Locust tree were received in England from Virginia, and soon afterwards it spread, first from France, and then from England, over all other parts of Europe. The subject here figured would, doubtless, have died long ago, had not special care been bestowed on it, in the way of clearing off such surrounding trees as at all interfered with it. It, therefore, now stands on a piece of fine lawn, and having more air, the few living branches which it possesses will, doubtless, still last a long time; but, as will be seen by the illustration, it has suffered much from the wear and tear of time. It is difficult to imagine what kind of form this tree had when in full vigour; but, in all probability, it was less symmetrical than that of seedlings raised from it, and which differ one from another greatly in habit, while among native seedlings little variety presents itself. It is, indeed, in all probability, from the old tree in the Jardin des Plantes that most of the numerous varieties now in cultivation have proceeded, and of which the following are the principal:—1. The Unarmed Robinia, a bush as common as the type, and distinguished (as its name indicates) by unarmed or spineless boughs. This variety has been named *Robinia spectabilis*. *Robinia Utterharti*, a common enough plant in gardens, obtained by M. Utterhart, in 1843,

from seed of the ordinary Robinia, is undoubtedly synonymous with *R. spectabilis*. Utterhart's Robinia bore fruit abundantly, but the produce reverted to the old type. The Unarmed Robinia forms elegant bushes which, when planted in the shape of single specimens on Grass plots or on undulated ground, have a fine appearance. 2. *Robinia crispa*.—This forms a large tree, nearly all the leaflets of which (especially those of matured branches) are more or less curled or tortuous. The particular tree possessing this form in the Jardin des Plantes differs from the other kinds merely in having the superior leaflets of this character, three or four pairs, remaining entire. 3. *Robinia umbraculifera*.—This is Dumont's unarmed variety, commonly called the Parasol Acacia. It is a tree of average size, close and bushy, so much so, indeed, as to form an almost impenetrable shade, a quality which renders it valuable for avenues. 4. *Robinia tortuosa*, so called on account of its twisted branching form. Like the last, it is a tree of average size, compact, and bushy. 5. *Robinia pyramidalis* (alias *stricta* or

fastigiata).—This forms a large tree, and was introduced by M. Leroy, of Angers. It has an upright habit of growth, something like that of the Italian Poplar, with which it might be easily confounded, especially in winter. The specimen in the Jardin des Plantes, is beyond doubt one of the most remarkable of trees, both as regards form and height. It was planted in 1843, by M. Pepin, and flowered and fruited for the first time in 1853. The seeds, numbering twenty-three, were sown in 1854; seventeen of them grew, and the produce was for the most part like the type. In 1859, the original tree of this kind measured 17 metres in circumference, its present height being more than 20 metres. 6. *Robinia Decaisneana*.—This is a very hardy variety, equal in development to the ordinary Robinia. It is a form obtained comparatively recently by M. Villevel, nurseryman, Manosque, Lower Alps, where it first flowered in 1862. The merit of this tree, however, lies less in

its habit of growth than in the abundance in which its bright rose-coloured flowers are produced, a colour rare among Robinias. 7. *Robinia monophylla*.—This was raised about the year 1855, by M. Deniaux, a nurseryman of Maine-et-Loire, and it flowered in 1864. It is a very variable kind.

These are a few of the best of the Robinias now in cultivation; but a few others might still be added, such as *Robinia patula*, a form of *umbraculifera*, but with wider spread branches; *R. microphylla*, *R. sophorifolia*, *R. macrophylla*, and *R. edwardsiaefolia*. *R. dissecta*, a kind whose leaflets are, we may say, reduced to their mid-rib; *R. bullata* with swollen leaflets; the common Robinia with leaves streaked with white, and another of a yellowish tint; the Marbled Robinia (*R. cornigera*), a sort armed with strong prickles; *R. monstrosa*, with branches more or less deformed or streaked; *R. pseud-acacia*, with flowers whitish-yellow; and, lastly, *R. latisiliqua*, known by the singularity of its form.—*Revue Horticole*.



One of the oldest Acacia trees in Europe.

Planting Railway Embankments.—Attention has often been called to the waste land by the sides of railways, much of which might yield profitable crops; but I have another reason to adduce why such lands should not remain in their present state. Anyone who

has recently travelled in England has seen on the railway slopes numerous marks of fires, which in many cases have extended to and destroyed the hedge, and occasionally have passed, as I know to my cost, on to the adjoining property, to the considerable pecuniary loss of the company, and to the great annoyance of the landowner. No one esteems more highly than myself the advantages conferred on the public by railways; but that is no reason why such pecuniary loss and annoyance should continue, if they can be avoided, as I think they may be, by what, if it did not yield a profit, would at any rate "pay its way"—I mean the cultivation of the ground now waste between the railway and the fence, the weeds on which, when dry, are readily ignited by fire from the engines. The crops grown must vary with the soil and climate. Potatoes, Turnips, Carrots, Onions, and Cabbages would succeed on the better soils; while the poorer might be planted with herbs. The railway companies may say, We have enough to do without becoming gardeners. True; but many would gladly pay a small rent for the land, the conditions being that the ground should be kept clean, and that the crops should be such as would be taken off while green.—M. MOGGRIDGE.

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

A Simple Arrangement.

OWING to the neat and pretty appearance which a few vases of simple flowers have had on our dinner table during the last few days, I have been tempted to furnish some account of them. In the centre was a white china trumpet resting in a kind of rustic frame-work of frosted silver, and round this neat little vase were grouped four small specimen glasses. Lightly arranged in the centre piece were the following flowers, viz., small pink and white Asters, pink Pelargoniums (Christine), long sprays of blue Lobelia, a few buds of Roses (Gloire de Dijon), Mignonette, some fronds of Maiden-hair Fern, and spikes of common field Grasses. In each of the specimen glasses were single blooms of Japan Lilies, two being pink-tinted, the other two pure white; these were backed by fronds of Maiden-hair. This little group was in use four days, and on a small-sized dinner table was very effective.

Mantel-piece Decoration.

This is an important matter as regards the decoration of the drawing-room, and one to which special attention should be paid, as vases on mantel-pieces occupy very prominent positions, and, unless skilfully furnished with flowers, are better dispensed with altogether. Specimen glasses filled with Everlastings, Rose-buds, Pelargonium blooms, or similar flowers, may be seen on every chimney-piece, and they are almost invariably one-sided, i.e., they face the room, all that is left for the mirror behind to reflect being the backs of the flowers or leaves, in place of as good an arrangement as that exhibited in front, which should be the case. As regards the ends of the mantel-piece, the first things to obtain are stands in which the flowers are to be arranged; these may be had of various shapes; but those best suited for this purpose are a pair of common zinc troughs, each about 10 or 12 inches long, 5 inches wide, and $3\frac{1}{2}$ inches deep, painted green on the outside and white on the inside. When about to be dressed with flowers, they should be filled with sand to within half-an-inch of the top; the sand should be then damped and covered with common Selaginella. If too much water be put on the sand, the flower-stems will not remain firm or upright. It is a good plan to have two pairs of these zinc troughs, one pair in use in the drawing-room, and the other pair with the Selaginella growing in them in the greenhouse. By this means, as soon as the flowers in the pair in use have faded, that pair may be removed to the greenhouse and the other pair introduced into the drawing-room, and arranged with fresh flowers. The greenhouse treatment soon revives the Selaginella, impaired in appearance by indoor confinement. This plan also holds good in the case of many other kinds of floral decorations in which zinc troughs or trays are employed. Round the edges of the troughs Fern-fronds should be used, and arranged so as to droop over and hide the sides as much as possible. The best kind of Fern for this purpose is the common Brake, which is sold in florist's shops in bundles; should the fronds be found too long, they can be cut as short as necessary, and the tip ends used. After the Ferns have been rightly placed, the flowers should next be arranged, and rather large and bold-looking varieties should be used, such as Roses, Lilies, Clematises, &c. These should be placed so as to stand out well one from the other, avoiding all appearance of crowding. Branches of Fuchsias look effectively mixed with such flowers as those mentioned, and plenty of foliage must also be intermixed with them. When the flowers have been arranged according to taste, the troughs should be placed on the mantel-piece, one at each end, and close to the margin of the ledge; some long sprays of trailing plants should then be inserted in the soil and allowed to droop down at each side. Sprays of *Lapageria rosea*, *Clematis*, Hops, Passion-flowers, *Tacsonias*, and similar material are admirably suited for this purpose, as are also different kinds of Ivies, which are light and graceful, and obtainable at all seasons—a great point in their favour. Those who do not care for troughs of growing Selaginella, may use, instead of them, a pair of those pretty small china pots sold at glass shops for standing on brackets and holding

cut flowers. I do not mean such as are sold for dropping pot-plants into, as the latter have always a hole at the bottom for drainage; the pots to which I refer are made on purpose to hold water in which to put flowers, and in these very effective arrangements can be made in the same way as that described for the troughs, but they can never be made to look as suitable in shape as the troughs. At nearly every season of the year we have flowers suitable for this style of decoration. In spring, we have Hyacinths, Tulips, Forget-me-nots, Snowdrops, Squills, Lily of the Valley, Lilacs, &c.; in summer, Roses, Pelargoniums, Fuchsias, Water Lilies, and Clematis; in autumn, Japanese Lilies, Roses, *Lapagerias*, and *Pancratium fragrans*; and in winter, those who have no glass-houses of their own, can obtain in the market Cape Heaths, *Chrysanthemums*, *Callas*, *Poinsettias*, and similar material. All these are adapted for this style of decoration. Specimen glasses with a few flowers and Ferns also look well on the mantel-piece, if dressed all round, but not if arranged to face only one way. A hand holding a vase, in china, is a pretty device for a few choice flowers, such as Orchids and Gloxinias; and, as a rule, richly coloured flowers are best suited for opaque vases, their deep tints being shown off to much better advantage on that kind of surface than on any other.

Screens for the Fire-place.

During the summer season, when there are no fires in the drawing-room, tastefully-decorated screens fitted into the fire-place have a charming effect. These often consist of looking glass and specimens of dried Ferns; but, as they do not come within my range, being dried, I shall pass them over, merely remarking that, though handsome, they are expensive. The best plants with which to cover screens are the common or variegated Ivies. First, a box should be procured, the width of the fire-place, to stand inside the fender; it should be made either of zinc or wood, and should be ornamented with coloured tiles—in fact, a box such as one sees on hundreds of window ledges; at each end, in the back corners, an upright iron rod should be fixed sufficiently high to meet the ornamental marble over the grate; between these rods a piece of fine wire netting should be strained, so as to form a screen on which to train the Ivy; this wire back should completely cover the iron or steel grate; over the holes in the bottom of the box some broken crocks should be placed, and over the crocks should be put a layer of Cocoa-nut fibre; then the box should be filled in with a mixture of rotten turf and some sharp gritty sand. Some nice plants of Ivy should next be procured and planted firmly in the box, and rather thickly, so as at once to cover the screen. Along the front of the box, set on the soil, may be pot plants, or the surface of the soil might be covered with *Selaginella denticulata* intermixed with cut blooms of large-sized flowers.

Wreaths and Garlands.

These rank among the prettiest styles of indoor floral decoration, their only drawback being that some practice is wanted to make them nice and light looking. Long pieces of wire are required for the foundations, and some bundles of Moss to keep the stems of both Ferns and flowers fresh. There are so many flowers suitable at all times of the year for this kind of decoration that I need not enumerate them, as the selection must depend on the size and description of the wreath or garland intended to be made; and, as a rule, light and airy-looking flowers are the best to select. As each flower is bound on to the foundation, after having been previously wired, it should be drawn out into the required position, and plenty of damp Moss should be bound round the stem of each to preserve its freshness. For small sprays use very little Moss; for, were it to appear, it would tend to make the wreath look heavy, but in a large garland its appearance does not matter so much; indeed, if the Moss is fresh and green, its being shown will be an advantage. Though the Moss should be damp, permit no water to remain therein beyond what does so when pressed after being washed; for, if water be allowed to drip from it, it would spoil anything the garland might happen to touch. A few sprays of *Lygodium scandens* look light and elegant twined through wreaths of any description. Heavy flowers should, as a rule, be avoided; as, though in themselves

they may be handy, they tend to give a heavy appearance to the wreath, which no amount of dressing with Ferns or other foliage will obviate. I am of opinion that if fewer Camellias were employed, and other flowers more plentifully substituted, such as Bouvardias, Stephanotis, &c., wreaths that are exhibited in the florists' windows would often have a lighter and more elegant appearance than they now sometimes present. Sprays of Ivy intertwine charmingly in this style of decoration; but young sprays of a good colour, and with small leaves, should be selected. Another creeper admirably suited for this purpose is the Japan Honeysuckle. This style of decoration is very effective where pot plants or vases of flowers cannot be employed. A. HASSARD.

PLANTS FOR WINDOWS.

THERE are hundreds of plants used for the decoration of windows and balconies during the summer months, in London and other large towns, that are nearly as short-lived as they are beautiful, lasting only a few months in perfection, and then looking withered and miserable after the first frosty night or morning in autumn. To this class belong many favourites, such as Sweet Peas, Convolvulus, Canary Creeper, Nasturtiums, and other graceful annuals, while anon the gorgeous beauty of the Virginian Creeper is comparatively short-lived, and vanishes at the approach of winter, leaving a few wretched-looking thong-like twigs, from which the cold wintry rains drip into the area or pavement below. There are comparatively few plants suitable either for window or balcony-culture during our sharpest winters, and these, few as they be, are but too seldom seen, although their presence during the dull winter months, and the first few sunny days of spring would do much towards dispelling the dreary monotony of our muddy streets, at a time when a glimpse of fresh green leaves, or the bright tints of a few flowers, is even more refreshing than during the hot summer weather, when the greenery of the deciduous trees in our parks and squares does much to attract the eye from the dusty and heated streets. We shall confine our remarks here to such plants as will thrive in an ordinary sitting-room window, premising, as a matter of course, that actual frost is excluded. For the purpose here indicated, some of the early-flowering bulbs are especially valuable, but as these, as a rule, are not very ornamental when growing, we must look elsewhere for fresh and gracefully-habited plants, amongst which they will show when in flower to excellent advantage. One of the finest of all foliage plants for windows, is *Acacia lophantha*, which bears dense, finely-cut foliage, as fresh and graceful as that of even the most delicate Fern. Pots of the slender, drooping, Grass-like *Isolepis (gracilis) pygmaea*, are always fresh and green; and as a substitute for the common fresh Moss-like *Selaginella Kraussiana*, we have the different varieties of the common Stonecrop (*Sedum acre*), which possesses a dense fresh-looking appearance all through the winter and spring. *Acacia armata* should be included by all means, for if a little less elegant in habit than *A. lophantha*, to which we have just alluded, it possesses the advantage of flowering freely early in the spring. Last January and February I had a couple of bushy little plants, scarcely more than a foot in height, and these were studded with hundreds of soft yellow globular flower-heads, which contrast admirably with the dark glossy green leaves. Another distinct and effective winter-flowering plant is the golden Pea-flowered *Coronilla glauca*, which does capitally in a sunny window, forming a glowing object of beauty in February or March, while, in the same position, *Cytisus racemosus* is quite equal, if not superior, and its rich yellow flowers are deliciously fragrant. The small-flowered or Pompone varieties of *Chrysanthemums*, must on no account be overlooked, as they are readily propagated from spring-struck cuttings, and form handsome little specimens, if pinched once or twice during the summer, so as to make them bushy. They grow freely if potted in richly-manured compost, and set on a cool border or walk to make their growth, and they need not be removed indoors until the flower-buds make their appearance, and the cold rains and frosty nights of autumn render protection advisable. The plants already enumerated would be

amply sufficient to render the windows of a town or suburban residence gay and attractive, and these are only a few of those well adapted for our purpose. Even if winter-flowering plants in pots, such as Hyacinths, Narcissi, Crocuses, Tulips, Cyclamens, forced Roses, Lily of the Valley, and Deutzias, are purchased now and then from the market, a few fresh foliage plants of permanent interest should be grown. One of the best of window plants is the broad shiny leathery-leaved India-rubber (*Ficus elastica*) and *Aralia Sieboldii* is even more attractive, having finely lobed foliage, which continues fresh and green throughout the winter. The graceful *Cyperus alternifolius*, and some of the hardier Ferns, such as *Polypodium aureum*, *Cyrtomium falcatum*, or the elegant little *Asplenium flabellifolium*, grow remarkably well in some windows year after year. For variety we have many distinct and striking forms of succulent plants, of which the smaller Agaves and Aloes may be mentioned as excellent examples. The pretty little white-flowered *Crassula lactea* blooms very freely about December and January in a sunny window, and it requires but a modicum of attention with regard to moisture. *C. quadrifida* is another member of the same group even more striking in appearance than that just named; and a few plants of such things as *Roechea falcata*, *Echeveria gibbiflora* var. *metallica*, *Gasteria verrucosa*, or some of the elegant silvery-spined *Mammillarias*, deserve a place in a dry sunny window, where they give but little trouble, and are of permanent interest, even if no flowers are produced. In order to render our window-garden arrangements pleasing to all tastes, we should endeavour to secure as much variety in habit, form, and colour as possible, and a little art displayed in arranging the plants in the window, so that they may look well from the interior as well as from the exterior, is desirable. This is a point too often neglected, and few things make a room look more dismal and uncomfortable than huddling a number of one-sided plants together, so as to make an exhibition for observers outside, while the apartment itself is robbed of its due share of air and light. Plants that draw towards the light should be turned now and then, so as to prevent their becoming one-sided and spindling in habit. A few distinct plants judiciously grouped and duly attended to, as regards occasional watering and sponging, will give more satisfaction; and look far better, than when an attempt is made to grow too large a collection without sufficient skill or means. F. W. B.

ARRANGEMENT OF FRUIT FOR DESSERT.

THIS subject has so recently been discoursed upon by your talented and tasteful correspondent in the matter of table-decoration (see p. 102), that it might seem superfluous to touch upon it again at present. But fruit is, just now, very plentiful, and there are some points in Miss Hassard's remarks to which I cannot subscribe; I, therefore, wish that your readers should have an early opportunity of comparing her views and mine on the very few matters wherein we differ. Fruit-arrangement should be treated under the two headings of arrangement on the table, and arrangement in the dishes. And, first, as to the

Arrangement on the Table,

if I could only hope that people would follow my advice, it would save my writing more than the notorious monosyllable, which contained *Punch's* advice to persons about to marry—"don't." I am adverse to fruit being put on the dinner-table at all, believing that the better plan is to hand it round, as dishes of all other kinds of eatables are served. But, if flowers are scarce, and there is nothing suitable which is available for the decoration of a dining-table excepting fruit, then, and then only, would I excuse the presence of fruit on the table, and even then there are certain fruits which I would not allow in the room (much less on the table), until the time came for offering them to the diners—to wit, Strawberries, Pines, Melons, and all other odoriferous fruits. No doubt there are many besides myself whose nasal organs have been annoyed at dinner by the smell of Hyacinths, Tuberoses, Narcissus, and other flowers. It should, therefore, be the rule to exclude from a dining-room all odours which may cause annoyance, or

prevent any guest from the full enjoyment of the meal to which he has been invited. But I go much farther, and assert that, not only should you avoid everything likely to cause discomfort, but you should endeavour in all your arrangements to give the greatest possible pleasure to the eye as well as to the palate. Now it is quite impossible that fruit which has been exposed for a couple of hours to the heat of lamps or gas, to the steam of soups, joints, and made dishes, and to the breath of diners and attendants, can be so pleasant and enjoyable as fruit brought in from a cool room and served at once; besides which there is the possibility, in the country, of its having been gathered since you began your soup, and of being, therefore, really fresh. It is a common saying, that "appearances should be kept up;" and I know of nothing to which it is more truly applicable than to fruit, which, to be tempting, should be made to look fresh, even if it be not so.

Arrangement in the Dish.

Strawberries, Raspberries, and Cherries, should never be arranged with the stalks turned inwards. The most enjoyable way of eating all kinds of fruit, is to pluck it and eat it on the spot. Apart from its freshness when thus partaken of, there is the great pleasure of knowing that no other fingers have touched it. When it cannot be eaten under these conditions, it should be borne in mind, that the fruit should always be made to look as fresh as possible, by dishing it up as late as possible, with the freshest of foliage, and it should seem as if it had not been fingered—at least the eatable part of it—by anyone. People may laugh at the extent to which fancy will carry some folks; but I have yet to learn that any harmless fancy is to be sneered at, or disregarded, because it does not happen to be everybody's fancy. With many people the eye and the nose are quite as important media of conveying pleasure at a dinner, as the mouth; and by them the greatest enjoyment is found at those entertainments where there is enough, both in variety and in quantity, to excite and interest the organs of sight, smell, and taste, but not enough to fatigue any of these senses. Cherries, Raspberries, and Strawberries should be laid as they are gathered, in the dishes in which they are to be served, and should never be touched again until they are eaten. Where this is not practicable, they should be removed from the basket in which they have been gathered to the dessert dish, one by one, the stalk only being handled; on no account is the fruit to be touched. I do not mean to say that I admire Cherry-stalks, or consider them ornamental, yet I would much rather put up with the appearance of the stalks, than partake of a dish of fingered Cherries. But with Strawberries the case is different; they have a persistent green calyx which, when seen as the fruits lie on their side, has a pretty effect, and sets off the berries to advantage. Miss Hassard has a great horror of Oranges, because they do not associate well with other fruits. No doubt their intense colour is very "killing;" and, if they are used as a side dish, there is nothing that will balance the opposite side of the table, except another dish of the same, and then "the remedy is worse than the complaint." My objection to Oranges has reference to the nose more than the eye. I can always manage to tone their colour down with foliage, or to give them a central place on the table where they do not clash with other fruits; but, unless they have been very carefully handled, their odour is very objectionable. There is a wide field open for the exercise of taste in the choice of foliage for dressing dishes of fruit, and I trust that Miss Hassard will favour your readers with further remarks on that subject. W. T. P.

GARDENING AT HOXTON IN OLDEN TIMES.

HOXTON was a favoured home of some of the most noted gardeners in the seventeenth and eighteenth centuries. One of the earliest of these was Gourle, who flourished in the reign of Charles II., and whose name has come down to us in an anagrammatic form attached to the Nectarine he successfully raised, viz., the Elruge. George Ricketts, Pearson, and William Darby are all three mentioned in Gibson's curious account of gardens near London, in December, 1691. Ricketts cultivated more than 190 kinds of Tulips, and he possessed the richest and most complete collection of flower-bearing trees and shrubs in the kingdom; Pearson had the best assortment of Anemones about London, and sold "them only to gentlemen;" and Darby was known as one of the first in England to cultivate exotic plants. He was succeeded by John Cowell, in whose garden flourished the Cereus and the Glastonbury Thorn. A great American Aloe was bought by Darby when it was twenty years old, and it remained in his garden for forty years, after which it came into Cowell's possession. When it was seventy-two years old it began to open its crown for flowering, and in June, 1729, it flowered magnificently. Large numbers of visitors were drawn to the gardens to see this curiosity. Another noted Hoxton gardener was Benedict Whitmell; but the most distinguished of the fraternity was Thomas Fairchild, who, by the judicious bequest of the small sum of £25, has succeeded in preventing his name from ever being forgotten. Fairchild united a love of science with the practice of his art, and contributed a paper on the motion of sap in plants to the Royal Society, which was printed in the "Philosophical Transactions." His grounds were afterwards known as Selby's gardens, and extended from the west end of Ivy Lane to the New North Road. Here he cultivated a Vineyard as late as 1722, which is said to have been one of the last in England. Fairchild by his will, dated Feb. 21st, 1728, "gave and bequeathed to the trustees of the charity children of Hoxton, and their successors, and the churchwardens of the parish of St. Leonard, Shoreditch, and their successors, the sum of £25, to be by them placed out at interest for the payment of 20s. annually, for ever, for the preaching of a sermon in the said church of St. Leonard, Shoreditch, by the lecturer of the said parish, or such other person as the said trustees and churchwardens and their successors should think proper, in the afternoon of the Tuesday in every Whitsun week in each year, on some subject relating to natural history." Among the noted men who have delivered the lecture may be mentioned Dr. Stukeley; the Rev. William Jones, of Nayland; the Rev. Samuel Ayscough; and Dr. Wilberforce, when Bishop of Oxford. In 1750, Stukeley made a note in his journal of a visit to hear the lecture; and as the passage gives us a picture of the state of the neighbourhood of Hoxton at that date, we will quote it here:—"I went with Dr. Folkes and other fellows to Shoreditch, to hear Dr. Denne preach Fairchild's sermon on the Beautys of the Vegetable World. We were entertained by Mr. Whetman, a merchant, at his elegant house by Moorfields, a pleasant place, encompass'd with gardens, stored with all sorts of curious flowers and shrubs, where we spent the day very agreeably, enjoying all the pleasures of the country in town." Hoxton was once noted for balsamic wells, and a book was written upon them. Sir Philip Skippon, writing to Ray (December 13, 1667), refers to "the sweet-smelling earth found in Captain Massey's garden, at Hogsden," and eighteen years afterwards, Sir Hans Sloane, in a letter to Ray (November 10, 1685), gives a full account of the earth, and an analysis of the water found "near the new square at Hockesdon." Whatever charms Hoxton may once have possessed, they are all gone now, and yet not many months ago, a London merchant purchased ground there, and built himself a house, which was finished, and fitted up with an elegant conservatory.—*Builder*.

Remarkable Artesian Well.—One of the most remarkable artesian wells of our own time is that of Grenelle, in the Paris basin. It was undertaken in 1834, up to which time no successful artesian sinking had reached a greater depth than about 1,000 feet. It was calculated that the water-bearing stratum sought would be reached at a depth of 1,500 feet; but that was not deep enough. The boring continued, with intervals, until 1841, when, on the 26th February, the boring-rod was observed to descend suddenly several yards. In a few hours the water reached the surface, eventually rushing up with immense violence, mixed with sand and mud. But the sand and mud soon ceased, leaving a magnificent flow of pure water, which has continued ever since. A high tower is erected, and the water rises through pipes with sustained force and volume to the reservoir at the top, at the rate of fully half a million gallons per day.

It is probable, says the *Hornet*, that the much wanted new City vegetable and fruit market will be erected on the site now occupied by the Bank of England.

Lasting Properties of Maiden-hair Fern when mixed with Flowers.—Do fronds of Maiden-hair Fern remain fresher when placed in a vase by themselves than when arranged with other flowers?—A. B. C. [This is a question which I have tested, and the following is the result:—Having selected six well-matured fronds of *Adiantum cuneatum*, I severed them from the plant with a sharp knife, and placed them in two large-sized specimen glasses, three fronds in each glass; but into one I also put three sprays of Mignonette. At the end of twenty-four hours the six fronds were as fresh as when first placed in the water; after forty-eight hours had elapsed, one frond in the glass along with the flowers looked a little shrivelled; at the end of seventy-nine hours, five of the fronds were as fresh as ever, the one which shrivelled at first being quite dead, but the other two remained perfectly fresh. This frond, I imagined, must have been younger than the rest, or injured in some way, as had the Mignonette harmed it, the other two would also have been injured. In this case, therefore, mixing flowers with Fern-fronds did no harm.—A. HASSARD.]

THE FLOWER GARDEN.

STAPHYLEA COLCHICA.

THIS species of *Staphylea* was introduced into France from the north of Europe, by M. Masson, about fifteen years ago, and how such a valuable early-flowering shrub should be so seldom met with in collections, it is difficult to understand. Its flowers, which are white, are borne in clusters, sufficiently numerous to be effective. It should have a warm light soil, and, if anything, rather dry than moist. It is increased by means of cuttings, and probably it would also succeed grafted on *Staphylea pinnata*, a stock which might be the means of dwarfing it sufficiently to make it a good market plant. About Paris it sometimes bears fruit, from which young plants are raised, and treated in all respects like those of some of the more common species.

WINTERING SUCCULENT PLANTS.

AMONG the plants that now decorate our flower gardens none are better worth keeping over the winter, or more worthy of special care during that season, than succulent plants, of which the desire to possess collections is everywhere on the increase. They will never supplant flowering plants; but, apart from their being used here and there in conjunction with them, in many places they are arranged in what may be called small "succulent" gardens, a mode of treatment for which they are eminently adapted, and under which their appearance is much more satisfactory than that of most sub-tropical plants, which in northern latitudes do not succeed. All succulent plants may be preserved through the winter successfully, provided a little attention is paid to properly storing them at first. The tender varieties of *Echeverias*, *Semprevivums*, *Gasterias*, *Haworthias*, &c., should all be lifted before they are in anyway injured by frost; this is a matter of much importance, inasmuch as the large fleshy leaves, especially of the *Echeverias*, if subjected in the least to frost, soon become soft and drop off, leaving only a few small leaves mounted on the tops of long stems, a condition which spoils the plant for another season. A frame, which can be warmed by means of fire-heat, is a suitable place in which to winter them, and a Vinery or greenhouse in which the atmosphere is dry, and from which frost is excluded, will be found to form an equally good hibernatory. If a frame is selected for them, put into it some light soil to the depth of 6 inches. Lift the plants carefully, and plant them in this in rows sufficiently far apart to prevent the plants touching one another, but not more, as they will not grow much during winter. As each row is laid in, a gentle watering should be given, and a layer of 1 inch of river sand should be put over the surface of the soil; this keeps the bases of the stems dry, and also assists in maintaining a drier atmosphere throughout the winter. They can, of course, be potted and wintered in the same place; but, when planted out, a greater number of plants can be got into the same space, and the labour attending potting is saved. After the first watering, little more is needed until well into spring,

and they may be allowed to remain in the frame until they are required for planting out again, when they will be found to lift with large balls and plenty of fine roots. The temperature in hard frosty weather may be allowed to drop to about the freezing point, but never below it. Abundance of air should be given on all favourable opportunities, and the atmosphere should at all times be kept as dry as possible to prevent damping. If water is given or needed at any time, it should be applied without letting any of it fall into the centres of the plants; for, when that happens, the heart soon begins to rot, and the plant is destroyed.

When succulents are kept in greenhouses or in Vineries, I prefer placing them in boxes to any other way. Cutting-boxes—from 4 to 6 inches deep, according to the size of the plants which are to occupy them, should be filled in much the

same way as has been directed in the case of frames, and the plants should be set closely together in them. In this way great quantities of the smaller kinds may be got into comparatively little room, and the boxes may be conveniently set on the top of the hot-water pipes, on the back-wall shelf, or in any vacant corner in which they will be undisturbed. Any leaves that show signs of damping off should be pulled clean off at the base—an operation easily done without injuring the stem. These remarks apply to such succulents as require protection from cold and damp throughout the winter. Dwarf hardy kinds of the House-leek type are capable of enduring, with impunity, all kinds of fluctuations of temperature. Many of them, indeed, acquire their brightest hues of foliage during cold bleak weather early in spring; therefore, unless some alteration as regards arrangement is desired, they may be left all winter undisturbed in their summer positions, where they form useful additions to winter and spring flower gardens. When thus treated, the off-sets, which sprout out around the old plants in summer, should be removed and planted, or "dibbled" closely in in rows in any reserve piece of ground, the soil of which is light and sandy. When taken off they will be found to have but little root, but plenty of young rootlets are soon emitted, and nice plants for bedding the following spring are thus secured. In cases in which the ground has to be cleared, dense-growing kinds may be lifted in patches and placed in any empty bed or corner of a border where they can have a little soil put round their roots, while such as have grown into tangled masses may either be divided at once and temporarily planted singly, or left untouched until March, and then separated and planted where they are to remain. Succulents, indeed, are so tenacious of life that they may be divided either in autumn or in spring, with equally satisfactory results.

J. MUIR.

Clovenfords.

Blooms of Sweet Peas for Market.—Sweet Peas are chiefly grown in market gardens to supply an early crop of blooms, which, however, they also furnish throughout the summer and autumn; but the early ones are the most valuable, and the more they are cut, the more do the plants produce. The earliest sowings generally yield a



Staphylea colchica.

heavy crop, provided they are made in moderately moist and rich soil. The summer and autumn crops, owing to bright weather and drought, are often short-lived. Mr. Pocock, Mortlake Road, Kew, sows his earliest Sweet Peas along the sides of walks that run through his grounds, in October or November, and when they come up a little earth is drawn to them. They are staked early in spring, and if the weather be favourable, they begin to bloom in April, and continue in good condition until July. All expanded flowers are cut for market three times a-week. They are tied into bundles in large handfuls, packed in baskets like Wallflowers, and sold in this way in the wholesale market. These market bunches are converted by the retail dealers into several small ones, which they sell for a penny or two-pence a-piece; but they retain all the best flowers for bouquet making. A portion of the produce of either the first or second sowing is left untouched, after having been picked from for about three or four weeks, for next year's seed. When the latter is ripe, the plants are cut over or pulled up, tied into bundles, dried in the sun, and kept in a loft until thrashed out.—F.

Novel Way of Treating Hollyhocks.—I am a great admirer of Hollyhocks, but I dislike the coarse and unsightly appearance which they assume in a short time after the first flowers have faded, or been reduced to a pulp by rain or strong sunshine, and also the inferiority of the extreme terminal flowers of the spike. To obviate this last defect I have been in the habit of cutting out the top while the lower blooms were in perfection. This year during my absence from the middle to the end of June, my man thought he was doing good service by removing the tops before the flowers appeared. The result has been to spoil the main spike, which grew up stunted and closely packed; but to make up for the disappointment, from every axil on the main stalk there has sprung out a number of shoots, forming elegant and graceful branches, to the number of more than twenty on some of the plants. These are now covered with perfect flowers, nicely spaced and distinct, alternating with very small leaves, and they look as if they would continue in perfection for another month. I do not know with what to compare their appearance; I have seen nothing like them. As these shoots grow uniformly round the stem, the general outline is that of a trained pyramidal tree with about 100 flowers expanded at once, and you may conceive what a fine effect the various beautiful shades of colour must produce. If any of your readers are inclined to try the experiment, I would recommend having only one stalk left on the stool which can be more easily staked and secured than a greater number, and will form a more elegant object than a number crowded together as usual. I may add that I have just been measuring one of them; it is 7 feet high, and 4 feet across at the lower part, tapering to the top. The side shoots do not exceed half an inch in diameter.—J. W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

New White Phlox.—We have sent you a piece of Phlox Miss Robertson, but not in good character, being drenched with rain, and only from spring-struck cuttings. We may inform you that we have grown it as large again.—J. COCKER & SONS, *Abchurch*. [The flower-spikes received were very large, pure white, and deliciously fragrant.]

Plants for a Steep Rock-work Facing North.—Kindly inform me what plants will do best on a bare steep rock-work with a north aspect.—G. W. B. [*Alyssum saxatile*, *Arabis albidia*, *Artemisia frigida*, *Astragalus monspeliensis*, various *Aubrietias*, *Campanula cespitosa* and its varieties, *C. grandis*, *C. carpatia*, and *C. trachelium*; different kinds of *Cerastium*, *Coronilla varia*, the Maiden Pink, *Iberis sempervirens*, *Lysimachia nummularia*, *Phlox reptans* and *subulata*, *Saponaria ocymoides*, various *Saxifragas* and *Sedums*, *Thymus lanuginosus*, *Vicia cracca*, and *Vicia major* and minor and their varieties, *Genista prostrata*, *Daphne Cneorum*, some of the dwarf *Cotoneasters*, *Rubus arcticus*, and *Polygonum complexum*.]

Silver-leaved Edging Plants.—What is the best silver-leaved edging plant? I want it for beds on Grass, and, if possible, it should be hardy, and a good match in general size to the Pyrethrum or Golden Feather. I should also like to know how it is best propagated, and at what time of year.—R. J. K. [The dwarf silver-leaved *Eranthis pinnatifida* might possibly suit you. It is propagated by means of cuttings put in in spring. *Cerastium Biebersteinii* is also hardy and grows freely, as does also *Stachys lanata* or "Lamb's Ear"; both plants are readily propagated in autumn or spring by means of cuttings or division. Of these, the *Cerastium* will, perhaps, suit you best, as it succeeds well in any soil and climate.]

Marchal Niel on its own Roots. Will some Rose authority advise me in the following case? Last spring, a strong plant of Marchal Niel on its own roots was planted in an old Vine border, and brought through the wall into the greenhouse. It has made a great growth, but shows hardly any flower-buds. Now, is there any hope that it will flower freely on its own roots? I rather fancy not from what I read in your paper two or three weeks ago, but I should be very glad of advice.—SALMONCIERS. [There is no reason why your Rose Marchal Niel, on its own roots, should not flower freely next year. Much, however, depends on the manner in which it is pruned. Prune in January, leave the long vigorous shoots their entire length, or, if they are not ripened to their ends, cut off only so much as is not ripened; then, cut off the small and moderate shoots, leaving from four to six eyes on every shoot. If there is a greater number of shoots than you require to fill the space at your disposal, cut out where indifferently ripened or crowded.—WM. PAUL.]

A NOBLE GIFT OF A GARDEN.

So much has recently been said respecting the gift of Leicester Square, &c., that the following account of a noble botanic and public garden, presented to the city of St. Louis by one of its citizens, may not be without interest:—Of the various enterprises of the West identified with ornamental gardening, the most prominent which we have seen in our travels is that of Shaw's Gardens, St. Louis. As a botanical garden it is, perhaps, the very best in the West, as pains have been taken to gather together a large number of the best specimens of each class of plants. But its celebrity has come mainly from its popularity as a pleasure resort for the citizens of St. Louis. It bears the same relative position in St. Louis among pleasure lovers, as the Central Park in New York city, or Woodward's Gardens in San Francisco. Originally known as the Missouri Botanical Garden, it was founded in 1858, by Mr. Henry Shaw, a wealthy citizen of the city. Possessing a love for rural ornament and gardening, as well as being the owner of an immense landed property on the outskirts of the city, measured by the square mile or more, he began the formation of the garden, both for personal amusement and yet with benevolent purpose—to afford a good example to the encouragement of rural taste. It has grown in his hands from small beginnings until at last it fills a space of 110 acres. The city has grown out to it; its finest avenue now skirts his property; and, like many other places of like beauty, it has passed from its uses as a private place to its form as a favoured resort for the public, and some time since was presented by him to the city, and now is the most acceptable place of enjoyment in the vicinity. There are various nurseries connected with the gardens, in one of which there are 20,000 plants growing, which will be set out in adjacent parks. There are often as many as thirty-five gardeners employed in the grounds, earning on an average two dollars per day. Connected with these grounds is the botanic hall, a red brick building with high steps. It is 35 feet wide, with a depth of 70 feet. Upon the floor is a beautifully tessellated pavement, and over-head a frescoed ceiling of artistic colours. Magnolias, Palm trees, Oleanders, Morning Glories, Pines and their cones, Lilies, Apples, Cotton flowers, Tobacco plants, with different fruits, flowers, and plants of the tropics and temperate zones, are woven into graceful garlands in the ceiling surrounding the skylight. It is hardly possible to tell all the treasures kept within these walls. Specimens of natural history, seeds of all kinds of vegetables and grain, bottled and arranged together, Pine cones of all sizes, Papyrus, Feather flower, silk from worms fed on Lettuce and Mulberry leaves, the Lettuce showing much the best in colour, tea from Paraguay, the Sponge plant, fibre of the Palm tree, Angora wool, Egyptian Wheat, Cotton from Greece, Sea Island cotton, and an immense collection of birds and stuffed animals. It is a round of great practical interest, and instructive to every visitor. Close at hand is the residence of Mr. Shaw, wherein all are welcome, and here is kept the record of all visitors, many of them famous. Just beyond is the now justly popular Tower Grove Park of 70 acres, a gift from Mr. Shaw to the city, already beautifully planted and kept. On our return from his house we pass the splendid octagon mausoleum, designed for his final resting place, built of hewn stone, with eight arches, overhung with trees which cast a deep shade. We trust it will be long ere it opens to receive him. Close by is another tombstone, raised as a tribute of respect to a gardener, esteemed for his devotion to horticulture, bearing this inscription:

TO THE MEMORY OF
THOMAS NUTTALL,

Born in England, 1786; died Sept. 1, 1869.

Honour to him, the zealous and successful naturalist, the father of Western American botany, the worthy compeer of Barton, Michaux, Hooker, Torrey, and Gray.

Within the past year Mr. Shaw has rebuilt his conservatory on a much larger scale. It is now 210 feet in length, almost as long as the great Palm-house at Kew. This garden has cost Mr. Shaw over twenty years' work, and 20,000 dollars a year. It has been wisely expended, for to the citizens of the city and state the beautiful sight has always been open "without money and without price." And now it has been devised to the city for ever. In addition to this handsome bequest of gardens and parks, covering an area of 200 acres, worth at least 200,000 dollars, Mr. Shaw has made sufficient provision in his will to keep and sustain them through all coming generations.—*Horticulturist*.

The Future Necropolis of Paris.—This is to be at Méry. The Municipal Council have resolved that a prize be offered, a few months hence, for the best system of incineration, and that the Assembly be petitioned to pass a Bill allowing cremation to be facultative in the city of Paris. Méry-sur-Oise is thirty-four kilometres north of Paris.

THE SHAKESPEAREAN GARDEN.

The Flower-de-luce.—The Flower-de-luce, several times mentioned by Shakespeare as the heraldic emblem of France,* is generally understood to be that beautiful yellow-flowered species of Iris often called the Water-flag. When adopted as the national badge is not known. Some refer it to the time of Clovis, others to the period of Louis VII., soon after which the shield of France was incorporated with that of England, and the golden Lilies, on their blue ground, stood in company with the three golden lions for centuries, disappearing only in 1801. Perdita's Flower-de-luce † was probably the great purple German Iris (*I. Germanica*), though several of the species of the genus had been cultivated in gardens from a very early period.

The Daffodil.—This is another of Perdita's flowers, being mentioned incidentally, in the same scene as the Flower-de-luce; with a second allusion in the verses sung a little previously by Autolyceus. There is no reason to suppose that anything was intended by Shakespeare beyond the common yellow Daffodil of our English meadows, but it is to be observed that the florists of the period give the name to the whole genus *Narcissus*, the Daffodil itself being distinguished as the pseudo-*Narcissus*. No mention appears to be made of this plant by any earlier author.

The Violet.—Shakespeare's Violet was unquestionably the common *Viola odorata*. The name is applied however, by Gerarde, to the Snowdrop and the Snowflake. He is particularly happy in his indication of the very special habitat of this sweet flower, as in the well known lines,

O, it came o'er my ear like the sweet south,
That breathes upon a bank of Violets,
Stealing, and giving odour. ‡

How exact again the indication of his personal acquaintance with it in the epithets of "nodding" and blue-veined. Altogether Shakespeare mentions this flower upon fourteen separate occasions.

The Carnation.—What Shakespeare has to say about the Carnation comes again from the lips of Perdita, who specifies them as "the fairest flowers o' the season." A very considerable number of varieties were cherished in gardens, the plant having been a favourite from time immemorial, though not mentioned in the classics.

The Columbine.—Nothing can be more simple than the allusions to this pretty and lady-like flower, mention of which is made twice.§ Though indigenous, it would seem to have been grown in gardens, since Ophelia has it in her hands along with Rue and Rosemary.

The Cowslip.—How often must the poet's eyes have rested in May mornings upon this darling of the meadows, the name occurring in no fewer than seven different passages, and the frequency of the mention, of course, being a gauge of the love felt for it. How exquisite, too, the epithets. At one time it is "tall," || this one, referring not to stature, but to the remarkably erect growth of the flower-stem, so different from that of the many little neighbours right and left, none presenting an attitude that could fairly be denoted by the same word. At another time it is "freckled," the picture here referring to what elsewhere the poet speaks of as the "drops i' the bottom," namely, the five beautiful scarlet spots, one to each lobe of the corolla, or, as in the "Tempest," the Cowslip's "bell." The Oxlip is well distinguished by the epithet of "bold," the plant being, in all respects, so much more imposing than the Cowslip. Shakespeare's plant was, no doubt, the form usually understood to be a cross between the Cowslip and the Primrose.

The Primrose.—The feature which most took Shakespeare's fancy in the Primrose appears to have been the light colour of the blossom when compared with other vernal yellows. Upon these several occasions he refers to the "pale" Primrose; while Perdita, in the scene which, of all others in Shakespeare, is the flowery one, adds that they "die unmarried." This curious expression seems to point to the early season of their perfection, flowers being fancifully supposed to be the

brides of the sunshine personified in Phœbus. Very beautiful, at the same time, is the description of a pleasant way to a place as the "Primrose path," a figure which occurs in *Macbeth*, ii. 3; and again in *Hamlet*, i. 3.

The Marigold.—This one was emphatically and especially the flower of the sun. Like so many of the others, it belongs to Perdita, and is charmingly described as retiring to rest when the day closes, and re-appearing when the daylight returns, covered with dew.

The Marigold, that goes to bed with the sun,
And with him rises weeping.

Everyone has noticed how true this is to Nature; the rays, that are so widely expanded at high noon, drawing closely together as twilight descends, and remaining shut until the next morning. The Marigold is a native of Continental Europe, and no doubt was of very early introduction, not so much, probably, as an ornamental plant, as for the esteem in which it was held as a pot-herb. This flower is also called by Shakespeare the "Marybud."

The Daisy.—The Daisy, one would have thought, Shakespeare would likewise have adverted to as one of the sleeping flowers, not even the Marigold being more conspicuous in respect to the evening change of position of the rays. But the references to this little gem of the greensward are of the most trifling character, and only one epithet is bestowed upon it, that of "pied," which refers to the pretty tipping of the rays with pink or rose colour.

The Buttercup.—Though not spoken of by its current appellation, there can be no doubt that this is the plant intended in *Love's Labour Lost* :—

When Daisies pied, and Violets blue,
And Cuckoo-buds of yellow hue,
Do paint the meadows with delight.

It is impossible for so abundant a field-flower not to have fastened many a time upon Shakespeare's fancy; the associations, moreover, with the Daisy and the Violet seem to leave no room for doubt, though it is true that Violets do not ordinarily grow in meadows.

The Cuckoo-flower.—This, which is casually mentioned in *King Lear*, allows, perhaps, of being identified more certainly; since in the old herbals it appears always as the vernacular name of the *Lychnis Flos cuculi*. In some parts of England the name of Cuckoo-flower is given to the *Cardamine pratensis*. The same old authors give also, as an equivalent of *Flos cuculi*, the English Crow-flower; but this last, mentioned casually, like the preceding, in *Hamlet*, is more probably the common Buttercup, just referred to.

The Harebell.—Not a little curious is it that, while the generality of the more obvious of our wild flowers have names more or less correspondent with them in other European languages, the Harebell, in this respect, stands alone. Once only is it mentioned by Shakespeare, viz., in the exquisite comparison above quoted :—

Thou shalt not lack
The flower that's like thy face, pale Primrose; nor
The azur'd Harebell, like thy veins; no, nor
The leaf of Eglantine, whom not to slander,
Out-sweeten'd not thy breath.*

The delicate light blue of the *Campanula rotundifolia*, the plant intended by Harebell, though the latter is sometimes applied to the *Scilla non-scripta*, is precisely that of the tender veins upon a white neck or white arm.

Eglantine.—This, which is an old name for the Sweet Briar, is by Chaucer spelt Eglantère. No references are made to the plant by Shakespeare, except the above, and the familiar one in the *Midsummer Night's Dream* :—

Quite over-canopied with lush Woodbine,
With sweet Musk Roses, and with Eglantine.

Being indigenous to our own country, and so attractive in the odour of the foliage, Sweet Briar was doubtless one of the very first plants to be carried from the wilderness into the garden.

The Woodbine.—Over the Woodbine there is some little difficulty. In his reference to the "Woodbine coverture"

* *Henry V.*, v. 2; 1st *Henry VI.*, i. 1 and i. 2; 2nd *Henry VI.*, v. 1. † *Winter's Tale*, iv. 3. ‡ *Love's Labour Lost*, v. 2; *Hamlet*, iv. 5. § *Midsummer Night's Dream*, ii. 1. || *Twelfth Night*, i. 1.

* *Cymbeline*, Act iv. sc. 2

Shakespeare intends, most clearly, the Honeysuckle; but when, in the same play, *The Midsummer Night's Dream*, he says,

So doth the Woodbine the sweet Honeysuckle
Gently entwist.

he cannot mean the same thing. Here we seem to have the great white *Convolvulus* of the hedgerows, which bears the name of Woodbine in Wm. Bulleyn, temp. Henry VIII. So, at least, it appears from his speaking of its "sweete Lillies," the identical name given by Pliny to the *Calystegia* flowers.

The Hawthorn.—The Hawthorn or May is spoken of by Shakespeare in six different places, sometimes as an accompaniment, in its fragrant white bloom, of the vernal season, sometimes as a thorny shrub.

Long Purples.—These are considered to be the flowers of the early purple or Meadow Orchis, the *Orchis mascula* of modern botany.

The Pansy.—And lastly, we have the Pansy, in the middle ages an emblem of thoughtfulness, perhaps because of the somewhat nutant position of the flower upon the peduncle. The name, which is French, exactly expresses the emblematic character. Once, Shakespeare calls it by a name long since disused, viz., "Love in Idleness."

Such, then, are the constituents of the Shakespearean garden, legitimately so called. Considering how many more ornamental flowers were cultivated, in addition to those he mentions by name, one cannot but feel what good taste he shows in the selection. Going through the pages of Gerard and Parkinson we find scores of others, more or less beautiful, described, the Tulip, for instance, the Larkspur, the Hollyhock, the Pink, and the Wallflower. British or wild flowers, in great variety, must also have been familiar to him; the scarlet Poppy for instance, the Forget-me-not, and Willow-herb. Estimating the floral wealth of our island at the time he wrote, we must not limit it, therefore, to what Shakespeare actually speaks of.

Passing on to the weeds and wild plants, which scarcely claim to be designated flowers; Shakespeare mentions Sedges, Burdocks, Reeds, Mallows, Nettles, Docks, Darnel, Brake, Briers, Brambles, Cockle, and Fumitory. Among trees, he adverts to the Ash, the Aspen, and the Birch; the Elder, the Lime, the Holly, and the Oak; the Pine also, the Bay, the Box, the Cedar, and the Cypress. We have reference likewise to Ivy, the Mistletoe, the Willow, the Osier, the Hazel, and the Yew. The fruit-bearing class is illustrated in the Apple and the Pear, the Apricot and the Cherry; while among fruits, considered independently of the trees producing them, mention is made of Mulberries, the Olive, the Pomegranate, Quinces, Dates, Figs, Grapes, Lemons, Filberts, and Medlars. Among culinary herbs and vegetables, we have Parsley, Samphire, Radishes, Turnips, Cabbage, Garlic, Leeks, Lettuces, Marjoram, Mint, Mustard, Peas, Beans, and several others. The agricultural or farm plants comprise, as would be expected, Wheat, Barley, Oats, and Rye; Vetches also, Clover, and Burnet. Pig-nuts, Ferns, Mosses, and Toadstools, also receive mention. And lastly, we have the imported vegetable productions which were employed in the Shakespearean age in the arts or in medicine, these include Cloves, Ginger, Mace, the Nutmeg, Pepper, Senna, Colocynth, &c.

Is it Possible?—Reading in a West London local paper an account of the various glories of Mr. Albert Grant's new mansion at Kensington, we came upon the following statement:—

To secure an uninterrupted view of Kensington Gardens, Mr. Grant has purchased the pretty antique lodge at the entrance to the gardens, together with the dead wall enclosing the grounds. These are being removed, and in their stead a handsome range of gilt iron railings, similar to those opposite Holland House, will be erected.

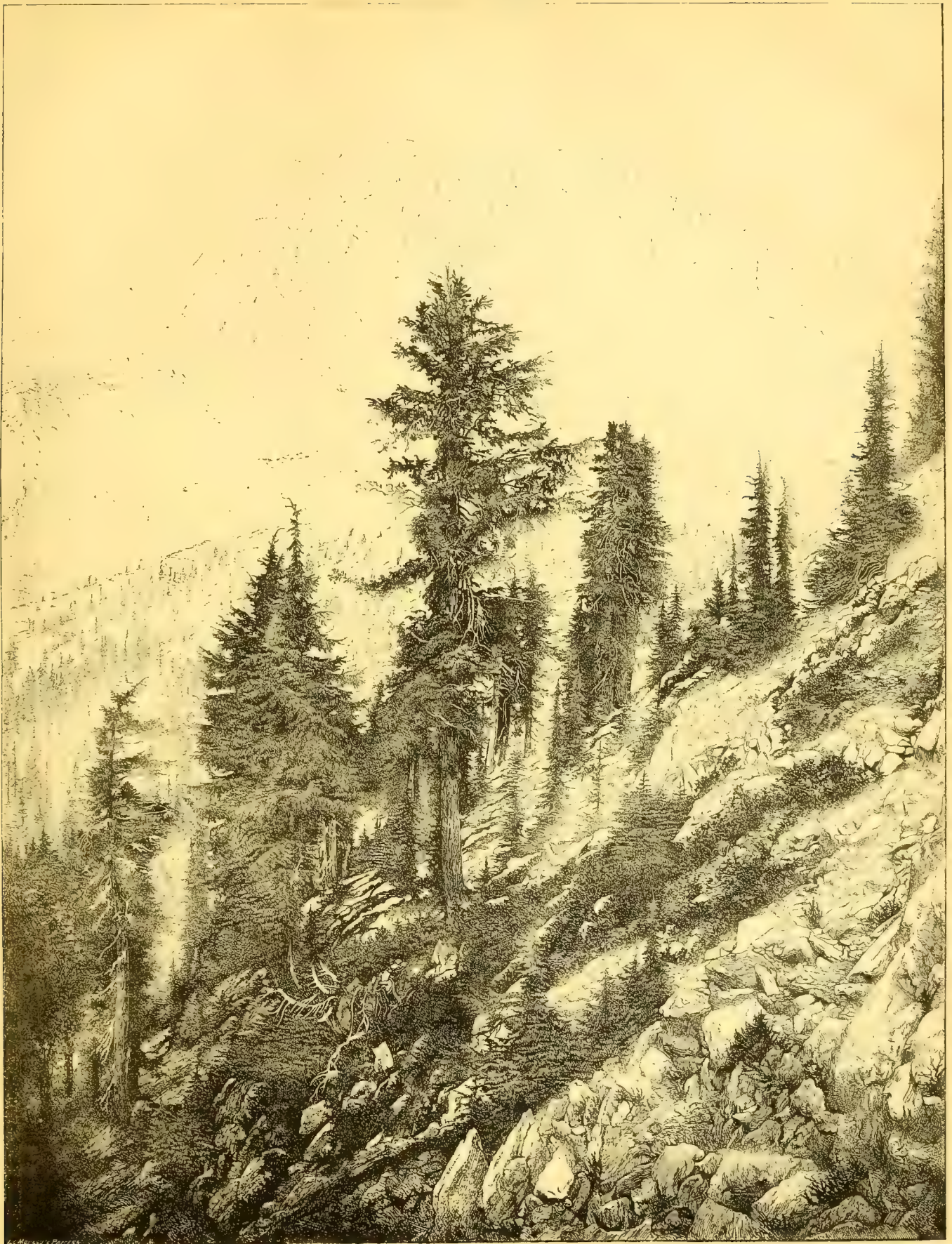
We had imagined the parks of London were not to be violated in this manner. Certain it is, in any case, that the old residence of Mr. Mann and Mr. Gibson is being demolished. It would be interesting to know if this has really been brought about through the influence of any private individual, and, if so, under what conditions.

ABIES HOOKERIANA.

(ABIES WILLIAMSONII.)

THERE are two species of Fir, lately introduced from California, that deserve more attention than they have received; one of them is the above named *Abies Hookeriana* or *Abies Williamsonii*; the other is *Abies Pattoniana*, otherwise called *Abies Hanburyana*. They are very like each other and nearly allied, although distinct, and are the type and sole representatives of a special form not very distinct from the Hemlock Spruce, of which they have the small leaves. *Abies Pattoniana* was introduced by the Edinburgh Oregon Botanical Association. It was found, in 1850, on the Mount Baker range of mountains, near Fraser River, in lat. 49° north, by their collector Jeffrey, and in 1851 they received seeds of it accompanied by the following remarks:—"It made its appearance at the point where *A. canadensis*" (this must have been *Abies albertiana* which Jeffrey had not distinguished from the common Hemlock Spruce) "disappears, that is at an elevation of about 5,000 feet above the level of the sea; from that part to the margin of perpetual snow it is found. Along the lower part of its range it is a noble-looking tree, rising to the height of 150 feet, and 13½ feet in circumference. As it ascends the mountains it gets gradually smaller, till at last it dwindles into a shrub of not more than 4 feet high." It was named by the Oregon committee after Mr. George Patton, of the Cairnies, afterwards Lord Justice Clark.

Abies Hookeriana is the representative of *A. Pattoniana*, farther to the south. It was found first by my brother, Mr. William Murray, on Scott's Mountain, in the northern part of the Sierra Nevada, and I described it in the *Edinburgh New Phil. Journal*, April, 1855, under the name *A. Hookeriana*. Two years later (1857) it was described by Dr. Newberry, under the name of *Abies Williamsonii*, in one of the botanical reports of the United States Pacific Railroad Explorations—Dr. Williamson having been the commander of the party to which Dr. Newberry was attached. They found it on the summit of the Cascade Mountains; my brother found the tree 50 feet high; one that he cut down measured 47½ feet high, and over 20 inches in diameter at the stump, and more distinguished by its gracefulness than its size. The timber was hard and tough. Dr. Newberry says:—"It forms a tree 100 feet in height, of which the form is rather spreading and irregular, but remarkably graceful." Mr. Lobb, in some remarks regarding it, published by Mr. Low, of Clapton, in a contemporary some years ago, says:—"In habit of growth and general appearance, it much resembles the Deodar, but being more thickly branched and more densely clothed with foliage, it is by far a handsomer tree." This exactly corresponds with a drawing of the tree which I received from Mr. William Murray, and which I subsequently utilised as a plate in Lawson's "*Pinetum Britannicum*." I need not occupy space in going over the specific differences between the two. It will be sufficient to give one character, which will enable them always to be readily distinguished. The leaves of *Hookeriana* are not serrated, and are silvery, or rather, mealy, both above and below, and large stomata are scattered irregularly over both sides. The leaves of *Pattoniana* are slightly serrated towards the tip, and are only silvery below; there are no stomata on the upper surface, and those on the lower are small and in long close rows. But for this character, it would be difficult to distinguish the one from the other in the young state as we see them in nurseries. There they are very generally planted near each other, and so it is easy to know that the darker coloured one is *Pattoniana*, and that with a lighter mealier hue *Hookeriana*. I had the opportunity of seeing it in its native habitat last year, and can bear my testimony to its beauty. I paid a visit to the Sierra Buttes Mine, the most prosperous gold mine at the present day in California, which lies high up in the Sierra Nevada, in Plumas county, occupying a considerable part of a sort of hog's-back ridge, standing by itself above the general level of the mountains, crowned by precipitous peaks and fanciful buttresses. Near the mine a good many fine specimens of *Abies Douglasii* and *Picea nobilis* still grow on the steep side of the mountains, although the constant and increasing demands of the mine are rapidly making it bare. A great part of the



HOOKER'S SPRUCE ON MOUNT SHASTA, CALIFORNIA.

range is, however, naturally without wood, and, at a distance, looks as if covered with a carpet of Grass. This is a deception common to all the mountains in California. It is not Grass, but a thick-grown, almost impenetrable, covering of Manzanita (*Arctostaphylos glauca*), a kind of *Arbutus*, of from 6 to 10 feet high, which grows over the whole of the country, and covers the face of the ground as thickly as a hedge, and is equally impassable. Before coming to the Sierra Buttes Mine, I had visited a neighbouring mine, named the Eureka, and had the place of the former indicated to me. I was told it was only seven miles off, as the crow flies, and it looked a uniform surface of smooth grassy slopes, which one might cross in a couple of hours. But these grassy slopes consisted of Manzanita, and we had to go sixty-five miles round to get past them. After passing through a tract of Manzanita, still ascending, trees began again to appear, consisting of the *Abies Douglasii*, a small-leaved *Nobilis*, and, at last, *Abies Hookeriana*, and it bore away the palm for elegance and beauty. It grew higher up the mountain than any of the rest, and it was to its branches that we tied our horses' bridles when further progression on horseback became impossible. It had less of the Poplar habit than the other Conifers in California. Even those which at home spread freely, seem there, whether growing singly or in forests, to be all straight and narrow in their habit; the Douglas, for example, which here flings its arms abroad so wide, is always there like a sentinel at attention. *A. Hookeriana* droops more gracefully; and the firmness and bluish glitter of its small leaves, with the young twigs and leader feathered along the stem, give it a peculiar character of its own. I saw no more beautiful tree in all California. ANDREW MURRAY.

THE KITCHEN GARDEN.

VEGETABLES FOR THE WINTER AND SPRING.

SELDOM have we experienced such a trying summer for the majority of culinary vegetables as the one now nearly over—at all events in the southern portion of the kingdom, where, in most places, the rainfall has not amounted to as many inches as the months that have elapsed since the advent of the year; and this, be it remembered, after some nine months of preceding dry weather, which, at the end of the past year, reduced the surface wells to an unprecedentedly low condition. The inestimable blessing of an abundance of good water cannot be fully realised by those who have never lived where the supply has run short. Within the last fortnight, in the neighbourhood of London, the long-looked-for rain has come, not in quantities to affect the wells to any considerable extent, and, though sufficient to set the flagging vegetable life in motion, too late to ever make the crops, upon which the principal winter and spring dependence has to be placed, anything more than half what they usually are. The late sowings of Turnips are all but failures, and can never come to anything more than tops. Winter Cabbage, Broccoli, Coleworts, and Kale, even where the land is rich and in a high state of cultivation, are very poor and small. Some there are who advise the sowing of Turnips, Kale, and similar things, even thus late; but, unless we are to have the sun fixed for a time above our horizon, it is just as well to allow the seeds to remain in the bags, for it cannot possibly be worth anything, and will only interfere with the preparation of the ground through the winter for other crops. Yet the prospect for many gardeners of being able to supply the cook with anything like the accustomed quantity of the greater portion of ordinary winter vegetables is such as will put many to their wits' end, and not a day should be lost in getting in every plant that can be obtained of Coleworts, green Kale, Savoy, and Cabbages. Those who are fortunate enough to have a quantity of July-sown Cabbage plants for next spring's supply cannot do better than put in every plant, regardless of how much they may exceed ordinary seasons, in well-prepared ground, at about 9 inches asunder each way. Of these every other row, and the alternate plants in the remaining rows, can be drawn even in a small state, and will, although not large, and inferior to full-grown Coleworts, be found much better than nothing to fall back upon. But in the increased breadth of these things planted, care should be taken not to put them where they will interfere with the trenching and preparation of the ground for another season, otherwise the usual rotation of cropping may be seriously interfered with. Even late as it is, a good deal may be done to accelerate growth by extra attention—keeping the ground stirred with the hoe through the autumn, and clear from weeds, especially if we have a protracted summer, which may reasonably be expected from the unusual

amount of heat accumulated in the earth. Not a single Cabbage stool should be removed, but as the crop is cleared off, the ground should be well soaked with manure-water. This particularly refers to such as are ready at the present time, which, if done growing, should be at once cut, so as to encourage second growth. Much more than the usual breadth of winter Spinach should be grown; this can be done by planting the thinnings out of the earliest sowings on well-prepared ground. These, if raised with a fork or the planting trowel, so as not to destroy more than unavoidable of the smaller fibres, will quickly begin to grow, and produce a crop that will be very useful before Christmas. One effect the late rains will have upon winter and spring Broccoli, will be to start them off again at a time when they have usually, in a great measure, made their growth, and are becoming every day better matured and enabled to withstand the winter. I have not the presumption to indulge in weather prognostications, but we have for the last two winters had very little frost, much below the average, and consequently may reasonably look to the coming winter as likely to be more severe, the effects of which late-growing vegetables will be in the worst condition to stand. Any ordinarily severe winter that comes, there are quantities of Broccoli that are killed through not having been in any way prepared to withstand the weather. It is well known that heeling the plants over has a beneficial effect, by checking their growth, yet this does not always get done: but in the present autumn there should be nothing left undone to preserve the little we have got. This heeling the plants over is not near so effectual as a means of preserving them from frost as absolute removal, which, in addition to this, has other advantages. The dampest parts of a garden are often selected wherein to plant the different varieties of winter Broccoli; now, such situations as these are just the places worst calculated to enable them to bear severe frost. If the plants at the end of October are taken up carefully, with all their roots, and planted on a dry piece of ground with their heads well over to the north, it is very seldom that a winter comes that will kill them. Again, some of the latest varieties can be laid in this way at the north side of a wall, which will cause them to come in three weeks later in the spring; giving so much better a chance of bridging the time over until the early Cauliflowers are ready. If the Broccoli thus removed is wintered upon a piece of ground that in its turn has been trenched previously in the autumn, it is still better enabled to withstand even the severest frosts, from the dryer condition of the land consequent upon the recent trenching. The effects of this I have repeatedly noticed, and it is nothing more than in accordance with every-day experience that where the land has been deeply stirred, so as to render the surface dryer, whatever crop is upon it suffers less from frost.

Importance of Irrigation.

Dry seasons, like the present, force upon us the consideration as to the necessity of an unstinted water supply, for large private gardens especially. Through the midland and southern parts of the kingdom I am aware that, in some cases, the kitchen garden is placed in the only situation possible; yet in many more instances there is not a thought directed to what would render it of redoubled value—that is, if a head of water was available so as to enable its being irrigated at pleasure. This would necessarily involve the garden being lower than some of the surrounding ground; but it does not follow that it should be in an objectionably low situation, and consequently in a position most likely to suffer from spring frosts—although it often happens that in the anxiety to get the kitchen garden as far as possible out of sight, a low-lying piece of ground is selected. The amount of produce it is possible to get from a limited space, where water in abundance can be had, so as to run it on in the quantities required, is only just beginning to dawn upon us, through the results of sewage and summer irrigated farms, which go clearly to prove that a piece of land, under almost any kind of crop, that is supplied with water to the full extent of its requirements, will produce something like double the weight of crop, that can be obtained in the ordinary way—to say nothing about the quality. Half the vegetables produced in this and similar seasons will bear no comparison with such as are grown under conditions of sufficient moisture, either naturally or artificially obtained. In the southern division of the kingdom, this summer, except in individually favoured spots, to produce one-half the usual vegetables has been a simple impossibility; and such as have been forthcoming, have scarcely been fit to eat. After the few first weeks Peas were flavourless, and as hard as bullets, literally roasted in the shells before they were fully grown. Broad Beans were the same. Turnips were either non-existent, or tough and uneatable; Cauliflowers small and unkindly, hard when cooked, and devoid of flavour; summer Lettuce, after the first crop, bolted before half grown; Beet and Carrots about half their usual size; and so on to the end of the list. The meagre supply in the markets from those who grow for sale, and who generally manage to find the

most suitable land for the purpose, is sufficient proof of the impossibility of producing vegetables in the wonted quantities in such seasons. But it is not alone the culinary vegetable department that would be benefited by a water-supply, but fruits as well. The finest Strawberries it is possible to grow, both in size and quality, can be produced, in the driest seasons, on land that can be flooded betwixt the rows. Apples, in most places, are a third under their usual size, through drought at the roots. Pears, in almost every garden, could be seen with their leaves flagging, and the fruit correspondingly small and gritty; Plums are in a similar plight where the crop was at all heavy. On walls the different fruits have been, in many places, even in a worse condition. So far as this question concerns market-gardeners, the majority are, no doubt, unable to do anything; for, even if a head of water existed that might be brought upon a given piece of ground, the chances are ten to one that to get at it land belonging to some other individual or holding would have to be traversed, which would render the thing impossible. Not so in many gentlemen's gardens; in great numbers, from the position in which they are placed, water might be obtained in unlimited quantities, and at a cost in conveying insignificant compared with the advantages accruing. This is so patent to anyone who has had an opportunity of proving the advantages it affords, that the reason there has been so little done in this matter through the country can only be accounted for by the fact that gardeners are only too often obliged to confine their wants within very narrow limits; so much so, that the results of their labours are rendered half nugatory by a spirit as short-sighted as it is penny-wise. In the choice of a site for new gardens, especially such as are important, this water-supply should be made a matter of the first consideration. I do not advocate the costly system of laying a network of underground perforated pipes through the area to be watered. This is extravagant, unnecessary, and in a few years becomes useless, from the pipes corroding away. All that is required is, first, to see that the drainage is ample, so that there may be no spots where the water can accumulate and become stagnant in the sub-soil; to properly dispose the surface so that the water can be got to flow where required; and then simply to convey it in pipes to the highest points, from whence it can be turned on as wanted, with the assistance of short hose pipes.

T. BAINES (*Field*).

Forcing Seakale.—No better place can be found for this purpose than a Mushroom-house; as, however, many may not possess a house of this kind, it may be well to observe that any structure which will exclude frost will answer. First, a steady bottom-heat of 75° should be secured; secondly, an atmospheric warmth of 60°; and, thirdly, total darkness. To these may be added a moist atmosphere at all times, which is an essential point. The roots must be taken up with care; for the less they are broken, the finer will be the Kale. I place them as thickly as they can stand together, and take care to keep their heads or crowns level; I then fill up loosely with very old tan or decayed leaf-soil, as the work proceeds. No water is allowed when they are first put in, watering being reserved for a subsequent operation. The fact is, they require rather a strong bottom-heat at first, to rouse them from torpidity; and this once accomplished, the sooner they are cooled down the better, or the Kale will become "drawn" and inferior. I seldom apply more than one watering, and I infuse a handful of salt in every large water-pot, sprinkling with a little clean water at last. This watering performs three distinct services; it reduces the bottom-heat, it settles the soil around the roots, and by an infusion of salt invigorates the fibres, which by this time are progressing rapidly. If the roots are strong, they will throw up a second "cut," little inferior to the first.—E.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Veitch's Giant Cauliflower, the Best for a Dry Season.—Doubtless others besides myself have had great difficulty in supplying Cauliflowers this summer on account of the drought. I find Veitch's Giant to be the best variety for a dry season. It stands bravely, while Walcheren and many others are literally burnt up.—R. GILBERT, *Burghley*.

Salt for Asparagus. E. B. This is best used in spring, before growth takes place: from 3 to 7 lbs. per square yard may be given. Sea-weed is good manure for Asparagus.

Mont d'Or Butter Bean.—Accompanying this is a sample of the Running Butter Bean, Mont d'Or, which appears to be an improvement upon the Wax Runner, as it is hardier, and also a better bearer. Both sorts were sown here side by side, on the 15th of May last, and the Wax Runner has been nearly a failure, while Mont d'Or has succeeded well, and the quality of the pods is excellent, being quite free from any stringy texture, and tender, even when nearly of full size. The colour is a pale yellow, so that it may almost be regarded as a new culinary vegetable. It requires to be staked, but its height this season has not exceeded 5 feet.—P. GRIEVE, *Culford*. [The specimens sent by Mr. Grieve, cooked as the French cook the Bean, which they call *Mange tout*, much resembled that vegetable, which deserves to be better known in England than it is.]

THE ARBORETUM.

WISTARIAS AND THEIR CULTURE.

INSTRUCTIONS in growing this family of plants will, to many persons, appear useless. They are so hardy and such rampant growers that success seems assured by simply planting and then leaving them to take care of themselves. This is true enough; but a little art and care bestowed upon them much improves their beauty. When the Wistaria is used for covering the side of a house or for shade to a piazza, some definite system of training should be adopted in so far as to decide what piers or columns of the piazza are to be covered, and whether the plant is to be trained along the cornice or to be carried yet farther upward to screen a window. When this is done and the necessary rods or wires have been provided, the proper shoots for the use required should be selected and thereafter all others that may interfere with the design to be carried out should be rigorously cut away. A system of pruning nearly similar to that of the spur system in Grape Vine pruning should then be adopted, or rather a system combining that with the system generally adopted for fruit trees which bear their flowers and fruits on old spurs. The Wistaria, though a climbing plant like the Grape Vine, produces its flowers from old spurs like a Cherry, a Plum, a Pear, or an Apple tree. In the month of July all shoots or eyes on the main or leading stems that may be reserved, should be pinched back to within a foot of the main stem, in order to check the rampant growth. These shoots will again break into growth from the buds just behind where the shoot was stopped off, and after they have grown a few inches in length they should also be stopped in the same way. The result will be the formation of flower spurs at the foot of the shoot first shortened. Early in the succeeding spring these shoots are to be cut back to within five or six eyes of the main stem, and the young shoots from these eyes are then to be treated in the same way as those of the previous year—and so on, year after year. By following this course of treatment, long continuous wreaths of flowers will be produced. When the leading stem or stems have reached the length it is intended they should attain, they should also be stopped, and the final effect will be an orderly and trim appearance of the plant, which yet, will not appear formal and stiff. Treated thus, the Wistaria may also be grown on the lawn, or as a specimen plant in the shrubbery—either on single stems or as ordinary shrubs with several stems. We grow nearly all our Japanese and Chinese varieties in this way, and no more beautiful objects in the way of shrubs can be had. We have a plant of *W. magnifica* with a single stem about 4 feet high and a cup-shaped head of 8 feet diameter, the whole plant being about 7 feet high, and, just now, a solid mass of fine flowers. We also have specimens of other varieties grown in bush-like form of nearly or quite equal size, each covered with hundreds of racemes of flowers. To our taste, they are far more elegant when grown in either of these forms than when grown as climbers, and the little extra trouble required to produce them thus is amply repaid. Of the Chinese species, *W. sinensis*, there are two varieties, or, rather, the original species with purple flowers, and a variety with light creamy-white flowers. This latter is a rather less rampant grower than the former. Of the Japanese species (*W. floribunda*) there are three varieties besides the original species; viz., the white-flowered, the flowers of which are pure white and the racemes very large; the long racemed-flowered, the racemes of which we have had 32 inches long (not shouldered, as in the other varieties); and the double-flowered, the flowers of which are as double as, and about the size of, a double-flowered Cherry. We have also a variety of another Japanese species, the leaves of which are covered with golden-coloured spots. Its leaves are also smaller and of a deeper green colour than in the two species previously named, and the bark is of a dark cinnamon-brown. The racemes of flowers are much smaller, of a deep purple colour, and the plant is of much more slender growth. We cannot determine what species it is, as we do not find it described in the books. Besides these, we have also received from Japan a very delicate-growing species, the stems of which are not larger than goose-quills. The leaves of this are very small, and the racemes of flowers only 3 or 4 inches long. The flowers are pure white and are produced in July and August. *W. magnifica* is a hybrid variety between the Chinese and the American species. It is a very robust grower. The individual flowers are very large, but the racemes are not as large as those of the Chinese, although more shouldered—an admirable variety to train as a standard. *W. frutescens* is an American species, a native of the Southern States, but quite hardy northward. It is a much more slender grower and blooms much later than the Chinese or Japanese sorts, and on this account we think it better adapted for verandahs. The flowers are of a light purple or Heliotrope colour, and the racemes are about half the size of the Chinese species. There

is a white variety of it, but this is somewhat rare and seldom to be found in nurserymen's catalogues. Besides all these there are *W. brachypoda*, *W. multijuga*, and *W. macrobotrya* to be had from some of our nurserymen. They are all desirable where a large number of varieties or species is wanted, but where only a few are needed the Chinese and Japanese sorts are the best for the garden. [So writes Mr. Hogg in the first issue of his "American Garden." Mr. Hogg, whose garden we had the pleasure of visiting some years ago, has the best collection of these noble hardy climbers we have seen, the best of them being introduced from Japan by his brother. We would especially commend the American fashion of training enormous wreaths of the *Wistaria* from the small gardens of city houses to the top of the house. They embellish the house in a very agreeable way, and yet do not touch it for the greater part of their length, so that the walls are quite free. The bush form also deserves attention.]

GRAND AVENUES FOR LONDON.

MAY I suggest one or two grand London improvements, which might be effected without any serious outlay? The

Hyde Park, in a direct line, a noble avenue of trees, springing from a broad strip of turf, might be established, which would produce a very noble effect—unlike anything else in the metropolis. To effect this, it would only be necessary to sweep away the paltry lines of balustrades and the (so-called) shrubberies of mutilated Lilacs and Privet bushes, and of irregularly planted trees, stunted by reckless lopping, and establish in their place a fine stretch of simple turf, in which detached trees, at sufficient distances from each other, should be planted. This treatment of the important thoroughfare in question would so greatly add to its apparent spaciousness, and to its beauty, that the value of the property would be at once greatly increased. The last instance we shall allude to on the present occasion as affording a grand opportunity of forming a fine city avenue, is that of the Mall in St. James's Park. To effect the desired amelioration, a few things require immediate attention. First, let the diseased and decaying Elms be removed at once, and as many lines of fine young trees of suitable kinds carefully planted in their places. Some think our opportunities for forming improvements of this



Entrance to the Central Avenue of the Champs Elysées.

first opportunity to be named is that connected with Portland Place and the gardens of Park Crescent. Portland Place is broad enough to allow of planting a line of trees on either side of the roadway, which would give it almost the aspect of a Parisian Boulevard. The carriage-way might, at its northern end, turn to the right and left, as at present; but in a line with its straight portion a broad footway of equal width to the straight carriage-way should be opened through the Park Crescent gardens into the Regent's Park. Such an improvement, if worthily carried out, would be the grandest thing in London; and, as leading almost directly to the beautiful gardens which have been so successfully created on either side of the Chestnut avenue in the Park, would become the most popular and favourite promenade of the West End, and would, in some respects, surpass even the boasted Champs Elysées themselves. Why, the direct opening from Portland Place to the Regent's Park should not have been effected long ago is difficult to account for; excepting that blind and seeming repugnance to any change, which is one of that kind of *Cosas de España* to which John Bull is as completely a slave as the most blue-blooded Hidalgo. Another fine opportunity for a grand Boulevard-like avenue occurs in Westbourne Terrace. From the Bishop's Road to

kind are few in London, whereas the reverse is the case, as, for instance, Oxford and Cambridge Terraces, and many other places that might be named.

H. N. H.

TREES IN ASSEMBLAGES.

SOME trees possess but little interest, except they are grouped in masses of greater or less extent. A solitary Fir or Spruce, for example, when standing in an enclosure or by the roadside, is a stiff and disagreeable object; but a deep forest of Firs is not surpassed in grandeur by one of any other species. These trees must be massed in extensive groups to affect us agreeably; while the Elm, the Oak, and other wide-spreading trees, are grand objects of sight, when standing alone, or in any other situation. Groves, fragments of forest, and inferior groups only are particularly interesting in a landscape. An unbroken forest of wide extent makes but a dreary picture, on account of its gloomy uniformity. Hence the primitive state of the earth, before it was modified by human hands, must have been sadly wanting in those romantic features that render a scene the most attractive. Nature must be combined with Art, however simple and rude, and associated with human life, to become deeply affecting to the imagination. But it is not necessary that the artificial objects of a landscape should be of a grand historical

description, to produce these agreeable effects; humble objects, indeed, are the most consonant with Nature's sublime aspects because they manifest no seeming endeavour to rival them. In the deep solitary woods, the sight of a woodman's hut in a clearing, of a farmer's cottage, or of a mere sheepfold, immediately awakens a tender interest, and enlivens the scene with a tinge of romance. Immense forests still overspread a great part of Northern Russia, through which it has been asserted that a squirrel might traverse hundreds of miles, without touching the ground, by leaping from tree to tree. Since the general adoption of railroad travelling, however, great ravages have been made in these forests, and not many years will be required to reduce them to fragments. In the south of Europe, a great part of the territory is barren of woods, and the climate has suffered from this cause, which has diminished the bulk of the streams and increased the severity of droughts. But Nature has established a partial remedy for the evil arising from the imprudent destruction of forests, in lofty and precipitous mountains, that serve not only to perpetuate moisture for the supply of rain to the neighbouring countries, but contribute also to preserve the timber in their inaccessible ravines. Were it not for this safeguard of mountains, the south of Europe would ere this have become a desert, from the destruction of its forests, like Sahara, whose barrenness was anciently produced by the same cause. Most of the territory of North America is still comparatively a wilderness; but in the United States the forests have been so extensively invaded, that they seldom exhibit any distinct outlines, and few of them possess the character of unique assemblages. They are but scattered fragments of the original forest, through which the settlers have made their irregular progress from east to west, diversifying it with roads, farms, and villages. The recent clearings are palisaded by tall trees, exhibiting a naked outline of skeleton timber, without any attractions. Travelling in a forest, though delightful as an occasional recreation, is, when continued many hours in succession, unless one be engaged in scientific researches, very monotonous and wearisome. Even the productions of a forest are not so various as those of a tract in which all the different conditions of wildness and culture are intermingled. A view of an unbroken wilderness from an elevation is equally monotonous. Woods must be blended with other forms of landscape, with pasture and tillage, with roads, houses, and farms, to convey to the mind the most agreeable sensations.

Colour.

The monotony of unbroken forest scenery is partially relieved in the autumn by the mixed variety of tints belonging to the different trees; but this does not wholly subdue the prevailing expression of dreariness and gloom. A remarkable appearance may always be observed in Maples. Some trees of this kind are entirely green, with the exception, perhaps, of a single bough, which is of a bright crimson or scarlet. Sometimes the lower half of the foliage will be green, while the upper part is entirely crimsoned, resembling a spire of flame rising out of a mass of verdure. In other cases this order is reversed, and the tree presents the appearance of a green spire rising out of flame. We see no end to the variety of these apparently capricious phenomena, which some have explained by supposing the coloured branches to be affected with partial disease that hastens their maturity; but this can hardly be admitted as the true explanation, as such appearances exist when no other symptoms of malady can be discovered. So much has been said and written of late in regard to the tints of autumn leaves, that the writer of this cannot be expected to advance anything new concerning them. Let me remark, however, that these beautiful tintings are not due to the action of frost, which is, on the contrary, highly prejudicial to them, as we may observe on several different occasions. If, for example, a frost should occur in September of sufficient intensity to cut down the tender annuals of our gardens; after this, when the tints begin to appear, the outer portion of the foliage that was touched by the frost will exhibit a sullied and rusty hue. The effects of these early frosts are seldom apparent while the leaves are green, except on close inspection; for a very intense frost is required to sear and roll up the leaves. Early autumnal frosts seldom do more than to injure their capacity to receive a fine tint when they become mature. The next occasion that renders the injurious effects of frost apparent is later in the season, after the tints are very generally developed. Every severe frost that happens at this period impairs their lustre, as we may perceive on any day succeeding a frosty night, when the woods, which were previously in their gayest splendour, will be faded to a duller and more uniform shade, as if the whole mass had been dipped into a brownish dye, leaving the peculiar tints of each species dimly conspicuous through this shading. The most brilliant and unsullied hues are displayed in a cool but not frosty autumn succeeding a moderate summer. Very warm weather in autumn hastens the colouring process, and renders the hues proportionately

transient. I have known Maple woods, early in October, to be completely embrowned and stripped of their leaves by two days of summer heat. Cool days and nights, unattended with frost, are the favourable conditions for producing and preserving the beauty of autumnal wood scenery. The effects of heat and frost are not so apparent in Oak woods, which have a more coriaceous and persistent foliage than other deciduous trees; but Oaks do not attain the perfection of their beauty until the Ash, the Maple, and the Tupelo (a species of *Nyssa*)—the glory of the first period of autumn—have shed a great portion of their leaves. The last-named trees are in their splendour during a period of about three weeks after the middle of September, varying with the character of the season. Oaks are not generally tinted till October, and are brightest near the third week of this month, preserving their lustre, in great measure, until the hard frosts of November destroy the leaves. The colours of the different Oaks are neither so brilliant nor so variegated as those of Maples; but they are more enduring, and serve more than those of any other woods to give character to our autumnal landscapes. It would be difficult to convey to the mind of a person who had never witnessed this brilliant, but solemn pageantry of the dying year, a clear idea of its magnificence. Nothing else in Nature will compare with it; for, though flowers are more beautiful than tinted leaves, no assemblage of flowers, or of flowering trees and shrubs, can produce such a deeply affecting scene of beauty as the autumn woods. If we would behold them in their greatest brilliancy and variety, we must journey during the first period of the fall of the leaf in those parts of the country where the Maple, the Ash, and the Tupelo are the prevailing timber. If we stand, at this time, on a moderate elevation affording a view of a wooded swamp rising into upland and melting imperceptibly into mountain landscape, we obtain a fair sight of the different assemblages of species, as distinguished by their tints. The Oaks will be marked, at this early period, chiefly by their unaltered verdure. In the lowland the scarlet and crimson hues of the Maple and the Tupelo predominate, mingled with a superb variety of colours from the shrubbery, whose splendour is always the greatest on the borders of ponds and water-courses, and frequently surpasses that of the trees. As the plain rises into the hill-side, the Ash trees may be distinguished by their peculiar shades of salmon, mulberry, and purple; and the Hickories by their invariable yellows. The Elm, the Lime, and the Buttonwood are always blemished and rusty; they add no brilliancy to the spectacle, serving only to sober and relieve other parts of the scenery.

When the second period of a fall of the leaf has arrived, the woods that were first tinted have mostly become leafless. The grouping of different species is, therefore, very apparent at this time; some assemblages presenting the denuded appearance of winter, some remaining still green, while the Oaks are the principal attraction, with an intermixture of a few other species, whose foliage has been protected, and the development of their hues retarded, by some peculiarity of situation. Green rows of Willows may also be seen by roadsides, in damp places, and irregular groups of them near the water-courses. One might suppose that a Pine wood must look particularly sombre in this grand spectacle of beauty; but it cannot be denied, that in those regions where there is a considerable proportion of Pines, the perfection of this scenery is witnessed. Something is needful to relieve the eye, as it wanders over such a profusion of brilliant colours. Pine woods provide this relief, and cause the tinted forest groups to stand out in greater prominence. In many districts where Pines were the original growth, they still constitute the larger sylvan assemblages, while the deciduous trees stand in scattered groups on the edge of the forest, and the contiguous plain. The verdurous Pine wood forms a picturesque groundwork, to set off the various groups in front of it; and the effect of a scarlet Oak or Tupelo, rising like a spire of flame in the midst of verdure, is far more striking than if it stood where it was unaffected by contrast. The cause of the superior tinting of the American forest, compared with that of Europe, has never been satisfactorily explained, though it seems to be somewhat inexplicably connected with the brightness of the American climate. It is a subject that has not engaged the attention of scientific travellers, who seem to have regarded it as worthy only of the describer of scenery. I have observed that the Smoke tree, which is a Sumach, from China, and the *Cydonia japonica*, are as brightly coloured in autumn as any of our indigenous shrubs; while the Silver Maple, which, though indigenous to the Western States, probably originated on the western coast of America, shows none of the fine tinting so remarkable in the other American Maples. These facts have led me to conjecture, that this superior tinting of the autumnal foliage may be peculiar to the eastern coasts both of the Old and the New Continent, in the northern hemisphere. May not this phenomenon bear some relation to the colder winters, and the hotter summers of the eastern, compared with the western coasts? I offer this suggestion as a query, not as a theory, and with the hope

that it may induce travellers to make some particular observations in reference to it.

In a natural forest there is a very small proportion of perfectly formed trees; and these occur only in such places as permit some individuals to stand isolated from the rest, and to spread out their branches to their full extent. When we walk in a forest, we observe several conditions which are favourable to this full expansion of their forms. On the borders of a pond or morass, or of an extensive quarry, the trees extend their branches into the opening; but, as they are cramped on the opposite side, they are only half-developed. But this expansion takes place on the side that is exposed to view: hence the incomparable beauty of a wood on the borders of a pond, or on the banks of a river, as viewed from the water; also of a wood on the outside of an islet in a lake or river. Fissures or cavities sometimes occur in a large rock, allowing a solitary tree that has become rooted there to attain its full proportions. It is in such places, and on sudden eminences that rise above the forest level—on a precipice, for example, that overlooks the surrounding wood—that the forest shows individual trees possessing the characters of standards, like those we see by the roadsides and in the open field. We must conclude, therefore, that a primitive forest must contain but a very small proportion of perfect trees: these are, for the most part, the occupants of land cleared by cultivation, and may be found, also, among the sparse growth of timber that has come up in pasture land, where the constant browsing of cattle prevents the formation of any dense assemblages. In the opinion of Whately, grandeur is the prevailing character of a forest, and beauty that of a grove. This distinction may seem to be correct, when such collections of wood exhibit all their proper characters; but perfectly unique forms of wood are seldom found in this country, where almost all the timber is of spontaneous growth. We have genuine forests; but other forms of wood are of a mixed character, and we have rather fragments of forest than legitimate groves. In the south of Europe many of the woods are mere plantations, in which the trees were first set in rows, with straight avenues, or vistas, passing directly through them from different points. In an assemblage of this kind there can be nothing of that interesting variety observed in a natural forest, and which is manifestly wanting even in woods planted with direct reference to the attainment of these natural appearances. "It is curious to see," as Gilpin remarks, "with what richness of invention, if I may so speak, Nature mixes and intermixes her trees, and shapes them into such a wonderful variety of groups and beautiful forms. Art may admire, and attempt to plant and to form combinations like hers; but whoever observes the wild combinations of a forest, and compares them with the attempts of Art, has little taste, if he do not acknowledge with astonishment the superiority of Nature's workmanship." When a tract is covered with a dense growth of tall trees, especially of Pines, which have but little underbrush, the wood represents overhead a vast canopy of verdure supported by innumerable lofty pillars. No one could enter these dark solitudes without feeling a deep impression of sublimity, especially if it be an hour of general stillness of the winds. The voices of animals and of birds, particularly the hammering of the woodpecker, serve to magnify our perceptions of grandeur. A very slight sound, during a calm in one of these deep woods, like the ticking of a clock in a vast hall, has a distinctness almost startling, especially if there be but little undergrowth. These feeble sounds afford one a more vivid sense of the magnitude of the place than louder sounds, that differ less from those we hear in the open plain.

In a grove we experience different sensations. Here pleasantness and cheerfulness are combined, and the feeling of grandeur is excited only perhaps by the sight of some noble tree. In a grove the trees are generally well formed, many of them being nearly perfect in their proportions. Their shadows are cast separately upon the ground, which is green beneath them as in an orchard. If we look upon them from a near eminence, we observe a variety of outlines, and may identify the different species by their shape, while in the forest we see one unbroken mass of foliage. A wild wood is frequently converted into a grove by clearing it of undergrowth and leaving the space a grassy lawn. It may then yield us shade, coolness, and other agreeable sensations of a cultivated wood, but the individual trees always retain their gaunt shapes. As we proceed southward, we witness a constant increase of the number of species gathered together in a single group. Nature is more addicted to the north to the habit of classifying her productions and of assembling them in uniform phalanxes. The painter, on this account, finds more to interest the eye and to employ his pencil in the picturesque regions of frost and snow; while the botanist finds more to exercise his observation in the crowded variety that marks the region of perpetual summer. But while vegetation is more generally social in high latitudes, several families of northern trees are entirely wanting in this quality. Seldom is a forest composed chiefly of Elms, Locusts, or Willows. Oaks and Birches are associated in forests, Elms in

groves, and Willows in small groups following the courses of streams. Those northern trees which are most eminently social, including the two just named, are the Beech, the Maple, the Hickory, the Coniferous trees, and some others; and by the predominance of any one kind the character of the soil may be partially determined. There is no tree that grows so abundantly in miry land, both north and south upon this Continent, as the Red Maple. It occupies immense tracts of morass in the middle states, and is the last tree which is found in swamps, according to Michaux, as the Birch is the last we meet in ascending mountains. The Sugar Maple is confined mostly to the north-eastern parts of the Continent. Poplars are not generally associated exclusively in forests; but at the point where the Ohio and Mississippi mingle their waters are grand forests of Deltoid Poplars, that stamp upon the features of that region a very peculiar physiognomy.

The characteristics of different woods, composed chiefly of one family of trees, would make an interesting study; but it would be tiresome to enter minutely into their details. Some are distinguished by a superfluity, others by a deficiency of undergrowth. In general, Pine and Fir woods are of the latter description, differing in this respect from deciduous woods. These differences are most apparent in large assemblages of wood, which have a flora as well as a fauna of their own. The same shrubs and herbaceous plants, for example, are not common to Oak and to Pine woods. There is a difference, also, in the cleanness and beauty of their stems. The gnarled habit of the Oak is conspicuous even in the most crowded forest, and Coniferous woods are apt to be disfigured by dead branches projecting from the bole. The Birch, the Poplar, and the Beech are remarkable for the straightness, evenness, and beauty of their shafts, when assembled in a dense wood. Some of the most beautiful forests in high latitudes consist of white Canoe Birches. We see them in Massachusetts only in occasional groups, but farther north, upon river banks, they form woods of considerable extent and remarkable beauty; and with their tall shafts, and their smooth white bark, resembling pillars of marble supporting a canopy of bright green foliage on a light feathery spray, they constitute one of the picturesque attractions of the country. Nature seems to indicate the native habitat of this noble tree by causing its exterior to bear the whiteness of snow, and it would be difficult to estimate its importance to the aboriginal inhabitants of northern latitudes. Yellow Birch woods are not inferior in their attractions: individual trees of this species are often distinguished among other forest timber by extending their feathery summits above the level of the other trees.

Pine Woods.

Pines are remarkably social in their habit, and cover immense tracts in high latitudes, extending southward, on this Continent, as far as the very boundary of the tropics, where they are found side by side with the Dwarf Palm of Florida. But in the region of the true Palms the Pine is wanting. Pine woods possess attractions of a peculiar kind: all lovers of Nature are enraptured with them, and there is a grandeur about them which is felt at once, when we enter them. Their dark verdure, their deep shade, their lofty height, and their branches which are ever mysteriously murmuring, as they are swayed by the wind, render them singularly solemn and sublime. This expression is increased by the hollow reverberating interior of the wood, caused by its clearness and freedom from underbrush. The ground beneath is covered by a matting of fallen leaves, making a smooth brown carpet, that renders a walk within its precincts as comfortable as in a garden. The foliage of the Pine is so hard and durable that in summer we always find the last autumn's crop lying upon the ground in a state of perfect soundness, and under it that of the preceding year only partially decayed. The foliage of two summers, therefore, lies upon the surface, checking the growth of humble vegetation, and permitting only certain species of plants to flourish with vigour. Fungi of various forms and sizes spring out of these decayed leaves, often rivaling the flowers in elegance. Monotropas, uniting some of the habits of the Fungi with the botanical characters of the flowering plants, flourish side by side with the showy Cypripedium and the singular Coral-Weed. The evergreen Dewberry, a delicate species of Rubus, trails its glossy leaves over the turf, and mingles its beaded fruit with the scarlet berries of the Mitchella. The Pyrola, named by the Indians Pipsissewa, and regarded by them as a specific for consumption, suspends its pale purple flowers in beautiful umbels. Variety, indeed, may be found in these deep shades; but it exists without that profusion which, in more favoured situations, often benumbs our susceptibility to the charms of Nature. The edging of a Pine wood depends on the character of the soil. The Pitch Pine, that delights in sandy plains, is embroidered at the north by White Birches; and if a road be cut through a wood of this kind, these graceful trees immediately spring up in abundance by the way-side. If a pond occurs in the middle of

a Pine wood, its margin is covered first with low bushes, such as the Andromeda, the Myrica, and the sweet-scented Azalea, then Alders and Willows rise between them and the forest. On the side of the pond that is bounded by high gravelly banks, the margin will be covered by Poplars and Birches. The White Pine, the most noble and the most beautiful tree of the whole Coniferous tribe, predominates in the New England forest; though some wide tracts are covered with the more homely Pitch Pines, which are the trees that scent the atmosphere on damp still days with their delightful terebinthine odours. In still higher latitudes the dark majestic Firs become the prevailing timber, and are regarded as typical of sub-arctic regions, where they are accompanied, as if to form a striking and cheerful contrast with their melancholy grandeur, by groups of graceful Birches, and lively tremulous Poplars.

The Pine barrens of the Southern States are of a mixed character, consisting of the Northern Pitch Pine, the Broom Pine, and the Cypress, intermixed with Red Maples, Sweet Gums, and other deciduous trees. The Pines, however, are the dominant growth; but here they do not grow so compactly as in colder regions, standing widely apart, with a frequent intervening growth of Willows and shrubbery. The sparseness of these woods may be in part attributed to the practice of tapping the trees for their turpentine, which has caused them for a century past to be gradually thinned by consequent decay. Their tall, gaunt forms and almost branchless trunks show that they obtained their principal growth in a dense wood. The first time I entered one of these Pine barrens, was some years since, in the month of June, when vegetation was in its prime, before the summer droughts had seared the green herbage, and when the flowering trees and shrubs were in all their glory. During my botanical rambles in the wood, I was struck with the multitude of beautiful flowers in its shady retreats,—seeming the more numerous to me, as I had previously confined my researches to northern woods. The Phlox grew here in all its native grace and delicacy, where it had never known the fostering hand of Art. Crimson Rhexias, called by the inhabitants Deer Weed, were distributed among the grassy knolls, like clusters of Picotees. Variegated Passion-flowers were conspicuous on the bare white sand that checkered the ground, displaying their emblematic forms on their low trailing Vines, and reminding the wanderer in these almost trackless solitudes of that faith which was founded on humility and crowned with martyrdom. Here, too, the Spiderwort of our gardens, in a meeker form of beauty and with a paler radiance, luxuriated under the protection of the wood. Already I observed the predominance of luxuriant Vines, indicating our nearness to the tropic, wreathed gaily over the tall and branchless trunks of the trees: some, like the Bignonia, in a full blaze of crimson; others, like the climbing Fern, draping the trees in continual verdure. These Pines constitute a great part of the timber of the flat country between the mountains and the coast, and render a journey through that region singularly monotonous and gloomy. In the low grounds, a considerable proportion of the wood consists of the Southern Cypress, a graceful and magnificent tree, whose appearance would be very lively and cheerful, were it not for the abundance of long trailing Moss (*Usnea*) that hangs, like funeral drapery, from its branches, and darkens the whole forest. This parasitic appendant wreaths the wood sometimes almost in darkness, especially those immense tracts on the borders of the Mexican Gulf that consist entirely of Cypress. There it has been poetically styled the "Garlands of Death," as significant of the fevers that prevail wherever it is abundant. It is remarkable that the two extremes of climate are distinguished by the predominance of evergreens in their vegetation. Thus the acicular-leaved trees, consisting of Pines and their congeners, mark the cold-temperate and sub-arctic zones, in north latitude,—while Myrtles, Magnolias, and other broad-leaved evergreens, mark the equatorial and tropical regions. The deciduous trees belong properly to the temperate zones, and constitute, indeed, the most interesting of all arborescent vegetation.—*Atlantic Monthly*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Good Street Trees.—Mr. J. Jay Smith, of Philadelphia, the originator of the vast and beautifully-designed garden-like cemeteries near that city, recommends the Silver Maple, the Sugar Maple, *Magnolia cordata* and *M. macrophylla*, the Yellow wood (*Virgilia lutea*), the deciduous Cypress, the Kentucky Coffee tree (*Gymnocladus*), *Salisburia adiantifolia*, and the Slippery Elm (*Ulmus fulva*). These are for the most part trees of which we have little experience in Europe.

Lawn Trees.—In selecting trees designed to decorate the lawn, and especially positions clearly within view, care should be taken to select those that retain their foliage fresh until late in autumn. Unfortunately, too many plant some of the early-maturing deciduous trees, which wither away while shade is much wanted. Let us remember that with deciduous trees, their leaves usually commence to fall with the maturing of their fruit, and that exotic hardy trees, such as the Acacia and the Catalpa, bear their leaves perfectly fresh much longer than native English trees.

THE CLOCHE PROTECTOR.

HERE is a sketch of a simple and inexpensive protection for plants, either under *cloches*, as represented, or grown in the ordinary way. The cover is made of bands of straw, interwoven with cord, so as to make a firm mat, 2 or 3 feet in width, and of any length that may be found necessary. At each end of a protector of this kind is affixed a wooden jamb or margin, hinged on to a peg which is sunk into the ground, as shown in our illustration. It will be at once seen that the protector can, by this simple arrangement, be set at any angle, and, from what we know of it, we can recom-



Cheap and effective plant-protector.

mend it as an efficient protector from both cold and sun, and a useful aid in the raising of seeds, cuttings, and tender crops. W.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Ground.

CUTTINGS of bedding plants of all kinds may now be generally obtained without difficulty, so push on their propagation with all possible dispatch, as cuttings of any sort put in after this time are generally found to be more difficult to winter than those which have been struck at an earlier period. The various kinds of bedding *Pelargoniums*, which have been some time inserted in pots, pans, and boxes, and placed in the open air, will now be found to be progressing as favourably as could be expected, and should be allowed to remain exposed for some time longer, or as long as it may be found safe to do so. The refreshing dews of night, so long as such nights are not too cold, keep the foliage in healthy condition, and, consequently, favour the emission of roots; mould or damp need not be apprehended while they are fully exposed to air and sunshine; but, as has been formerly advised, the lights of the pits or frames in which they are placed must be in readiness, so as to be easily applied whenever danger is in the least degree to be apprehended. Cuttings of *Verbenas* and other half-hardy bedding plants will yet strike root freely in cold pits or frames, which should be kept quite close for some time, while *Alternantheras*, *Coleuses*, and other tender species may have similar treatment for a week or two, or until the nights become colder, when they must be transferred to a more genial temperature—say not under 60° for some time, or until the cuttings become fairly rooted, when the temperature may be gradually lowered to about 50° as a minimum. Layers of *Carnations* and *Picotees* will now be well rooted, and may be taken off and potted, using light sandy soil for the purpose. Add fresh compost to the piece of ground intended as the site of the Tulip bed, and let this, in the mean time, be turned frequently. Prepare also a bed for offsets; and, with a view to encourage them, give them also a good situation and good soil. Give the necessary attention to "carpet" and other beds in the flower garden, removing decayed leaves and flowers. Mow lawns and Grass belts as frequently as may be necessary; roll gravel walks, and endeavour by every means to prolong the beauty of the parterre as long as possible. Where the removal or transplantation of any large trees or shrubs is contemplated—this may generally be accomplished about the present time, with less danger or risk to the plants, than perhaps at any other period of the year, as it allows ample time for the formation of fresh roots before winter sets in. Damp, showery weather should, however, be selected for such operations; but, failing this, the plants should, in addition to being well watered at

the roots, be well syringed every evening, for some time after being transplanted, and the surface of the soil should be mulched, to prevent, as far as possible, evaporation from the soil. Cuttings of such trees and shrubs as Aucubas, Laurels, of sorts, Privets, Yews, and Roses, may also be inserted now. These should be placed under hand-glasses, on, if possible, a slight bottom-heat, when they will soon root freely; or, where it may be desired to increase any valuable trees or shrubs by layering (a more expeditious method than increasing by cuttings), this may also be done now, and such layers will have time to emit roots to some extent before winter, and this is a considerable advantage.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Hardy Flowers, Alpine Plants, and the Wild Garden.

Signs of autumn are now making themselves evident in the sere and yellow leaf, and the gradual lengthening out of the shadows; yet, as we write, there are occupants of well-selected herbaceous borders just coming into full flower, and others yet to come. These plants have a special value, seeing that ere long the more showy, but tender, denizens of the flower garden will have succumbed to the cold clear nights that usually usher in the harvest moon; then it is that the value of these hardy plants becomes fully recognised. How lovely now are the three autumn Anemones—the old semi-double *A. japonica*, with its deep rosy flowers, so deep as to verge upon crimson, and so persistent of life, as almost to defy eradication; well might the old celestials select it as a fitting plant to decorate the graves of their ancestors. The soft rosy-coloured *Anemone hybrida* bears in its single blossoms the stamp of its parentage from the "Vine-leaved" *Anemone* of the Himalayas, and the pure white *Honorine Jobert*, another of its progeny, equals its parent in purity and rivals it far in size, while it inherits all the vigour, if it does not absolutely excel, in this respect, its Japanese ancestor. The roots of all these produce leaf-buds freely, and by this means these plants may be readily increased; note, however, that they acquire their full development only by long and undisturbed possession. From the Anemones to the *Gypsophilas* is a long leap; it was my intention to follow the established system of classification, but I believe I will feel much more at home as a bee flying from flower to flower, regardless of natural affinities, which, while appreciated by a few, will be of little value to the many. *Gypsophilas*; what of them? All I can say is to know them, is to grow them. In height they vary from prostrate trailing plants (as instanced by *prostrata*, *dubia*, and *repens*), through various gradations (whose names I need not enumerate), to such as *Gypsophila altissima* now in bloom, fully 6 feet high, its pure white blossoms, supported on slender hair-like stems, reminding one of "the starry firmament;" no more useful plant for contributing lightness and elegance to a bouquet than *Gypsophila paniculata*, but its stars have ceased to twinkle nearly a month since. A tolerably close relation to the foregoing is the *Saponaria officinalis*, which, in its double state, is much more frequently met with than in the single; it is, however, like *Horseradish* in the kitchen garden, or *Bindweed* in the hedge-row, a determined monopolist—setting at defiance all the straight-laced ideas of order and regularity—and, though useful in its way, may be induced to run to too great an extent to admit of Nature's full development of her beauties; therefore, let *Saponaria* have a free and unrestrained corner of the wild garden to itself, and, when planting the old well-known species, be sure to get the variety called *caucasica*; though sometimes called a species, it is nothing more than a dark rosy form of our old familiar friend; both are plants that appear to be independent of drought, and are admirably adapted for the autumns of all time. *Dianthus superbus*, though a Pink, is one that would put a florist into a fever; nevertheless, as all are not florists, there are some, and not a few, who will endorse the fact, that it is a desirable plant for the herbaceous border; its perfume is delicious, especially late in the evening, when the heavy dews, if they do not develop, at least arrest and retain the floating fragrance in the atmosphere. I have a hybrid form of this plant crossed with the *Sweet William*, which is now, as I write, in the full development of a second crop of bloom, and, singular enough, its second floral display arises from the same panicles as the first; but, alas! what it has gained in beauty, it has lost in fragrance. The old species seeds freely, but the hybrid, apparently so satisfied with its own perfection, appears to put a stop to any possibility of variation, as its pods, though fully developed, are always devoid of perfect seeds. From the Pinks to the Mallows is a considerable step, and, possibly, there may be a stepping-stone or two, but at the moment I did not see them, and, lighting on the Malvaceous bank, have seized on the trailing branch of a glorious plant suffused with carmine blossoms, fully 2 inches in diameter—the flowers of *Callirrhoe involucrata*; fortunately, all the Mallows are tough, yielding a large amount of textile material, so we are safely landed amid the family circle. Anything more lovely for a dry sunny bank than this plant can

scarcely be imagined; unfortunately, the whole army of snails and slugs appreciate it equally as much as we do, and, what is more, indulge in their morning repast at an earlier hour than we are wont to be astir; hence, it is apt to suffer from them. Somewhat like this plant in its prostrate habit is the *Malva lateritia*, whose dark green foliage contrasts admirably with its salmon-coloured blossoms; nor is its more exalted neighbour and relation, *Malva Moreni*, to be despised, producing, as it does, a succession of bloom that lasts from June long into the autumn. Its Thuringian neighbour produces larger blossoms, but is more restricted in the period of its floriferous existence. *Erodium Manescavi*, though having done good service ever since the beginning of May, is yet freely producing its large bright coloured blossoms. The best way to increase this plant is by seeds, which it produces freely some seasons; failing such, small pieces of one of the fleshy roots, placed in a gentle heat, will soon emit leaf-buds; these plants have not that vigour of growth such as seedlings possess. Closely related, but more rambling, is the Himalayan *Geranium Wallichianum*, or *Lambertianum* as it is sometimes called—pretty in its dark maroon flowers, its mottled dark green foliage, and its free trailing growth; which latter admirably adapts it to a projecting ledge of the rockery. Amongst the *Flaxes*, we have yet, though the sky blue species have passed away, the bright yellow of *Linum flavum* or *tauricum*, whose property of continuous flowering, compact growth, and perfect hardiness, renders it a valuable plant. *Linum corymbiflorum*, though not hardy, is well worth growing on account of its peculiar buffish-yellow colour and the light and graceful arrangement of its flowers. It is of slender growth, and requires to be supported by artificial means. *Francoa*, a Saxifragean genus from the lofty mountains of South America, is one of the few really hardy plants for which we are indebted to the Southern Hemisphere. From the midst of fine massive lyre-shaped leaves rise the flower-spikes, now in full blossom, to a height of 2 to 3 feet; that of *F. ramosa* is pure white, *F. sonchifolia* dark pink, and that of *F. appendiculata* a sort of lilac-rose; these are all readily increased by seeds or cuttings, which root freely in a cold frame. Amongst Composite plants we have many autumn-flowerers; already *Michaelmas Daisies* are in full bloom. Amongst them the abundant-flowering *Aster paniculatus* is a mass of flowers, individually small, but, collectively, very effective; further, it is a nice tufty grower, not a rambler below ground, nor is *A. spectabilis* to be despised. *A. macrophylla* and *Lindleyana*, though still pretty, have passed their best. Closely allied to the *Asters* is the genus *Callimeris*, of which the woolly-leaved *C. Diplopappus* is an almost continuous bloomer through the summer, and has stood this dry season wonderfully well; its flowers are large, and tinged with a soft lavender tint.—J. C. NIVEN, *Botanic Gardens, Hull.*

Rose Screens.

I find wood to be preferable to wire for screens, inasmuch as when Ivy is employed along with Roses in their formation, the Ivy clings to the wood and forms a more solid screen than wire. I have a screen of this kind between 12 and 14 feet in height; the ground plate is 5 inches by 4, the upright braces and top plate 3 inches by 4, the mesh 5 inches, and the lathes 1 inch wide and $\frac{1}{2}$ inch thick yellow deal. In three years after its formation this screen was one solid looking wall of Ivy, Roses, and Virginian Creeper. This is the season to get such screens made and painted so as to be ready for planting as soon as Roses can be moved. To have a screen well covered in a given time much depends on the ground. It should be trenched 2 feet deep, mixing with the soil, as the operation proceeds, plenty of good rotten stable manure and fresh loam. If the soil is naturally sour in character, the best plan is to have it wholly removed 3 feet wide and 2 feet deep, and to substitute for it good fresh mould of a loamy nature and well-rotted stable manure; and, where brick or lime rubbish can be had, also to add some of that to the soil. This mixture will be found to suit both Roses and Ivy. Ground for screens of this kind is best prepared a month or so before planting, inasmuch as the manure gets more decomposed and more thoroughly mixed with the soil. In planting Roses it is a common practice to dig a small hole, throw in a little manure, and to plant the roots in the manure, leaving the rest to chance. This will not, however, answer in the case of screens, for which both soil and drainage must be perfect, or disappointment will be the result. As to material, use good strong plants of Irish Ivy set 5 feet apart, Virginian Creepers about every 10 feet, and fill in with Roses 18 inches apart. To associate well with Ivy the Roses should be strong growing sorts, such as *Gloire de Dijon*, *Jules Margottin*, *Sir Joseph Paxton*, *Chéné-dolé*, *Acidalie*, *Amadis*, *Glory of Waltham*, *Ophirie*, and similar kinds. *Jules Margottin*, on its own roots, will grow from 12 to 15 feet in height, and it is one of the best of all hybrid perpetuals in cultivation, both indoors and in the open ground, where I have numerous fine plants of it.—H. G.

Indoor Plant Department.

Sedum spectabile is at present quite a gem in conservatories and similar structures; associated with foliage of *Coleuses*, *Iresines*, and other fine-leaved plants, it has a pleasing appearance. *Salvias*, *Cassias*, some of the late-flowering *Fuchsias*, *Celosias*, ornamental Grasses, and several of the fine-flowered *Begonias* also now show a considerable amount of bloom. *B. Weltoniensis* is one of the best for purposes of general decoration, its habit being good, and it produces a great profusion of bloom, though it does not throw it up very conspicuously from amongst the foliage. Some of the herbaceous kinds, such as *Boliviensis*, look well trained as dwarf standards, especially when the branches are allowed to droop. *Jasminum grandiflorum* is now everywhere in great beauty, and some *Gesnerads*, such as *Nægeliæ*, *Eucodonia*, and *Tydæas*, are also flowering freely in warm corners. Some plants of *Campanula pyramidalis* are also now doing good service; others for later use are placed out of doors on beds of ashes. Sedums for late flowering should be placed at the base of north walls, as should also *Brugmansias* required for later blooming. Pelargoniums for succeeding those at present in bloom should be kept in cool houses rather close, the plants being syringed overhead early every afternoon. Plants of *Solanum Capsicastrum* should be plunged in beds in the open air, where their berries get nicely coloured. *Heliotropes*, *Salvias*, *Sériscographis Ghiesbreghtiana*, and plants of like character to be used in the decoration of conservatories hereafter, should also be plunged out of doors. *Plumbago capensis*, one of our finest summer and autumn blooming plants, is now in some places superb. Young plants of it struck from cuttings in spring, and grown on steadily till now, removing all flower-spikes during the summer time, promise to keep up a display of blossom for the next two or three months. *Gomphrena globosa*, too, though apt, sometimes, to damp off suddenly, also comes in useful at this season. *Chrysanthemums* still out-of-doors should have a coating of cow-manure placed on the surface of the pots, applied in the form of a basin, the water descending through which washes down nourishment to the roots. In stoves, plants of *Poinsettia pulcherrima* required for early work should be encouraged by a little bottom-heat and a brisk atmospheric temperature, also by occasional applications of manure-water; some for later blooming should be re-potted into 4-inch pots, and receive cooler treatment. *Euphorbia jacquiniæflora* should be managed in a similar manner. Some of the *Gesneras*, in the way of *G. zebrina*, *elongata*, &c., are now coming into bloom, and should be supplied with weak manure-water, care being taken not to wet the leaves, as in that case they would become spotted, thus greatly marring their beauty. It is not, however, desirable to have all the *Gesneras* in bloom so early, and in order to avoid this they should be started at different times. Some of the later ones just showing flower should now be potted, using a compost consisting of two parts good yellow loam, one part rotten manure, and a goodly portion of sand. Some use a little turfy-peat in their soil. *Justicias* should now be shifted into a good rich compost. If kept in vigorous health, and free from insects, they soon grow into large specimens, especially if encouraged with a little bottom-heat, weak manure-water to root-bound plants, and occasional sprinklings from the syringe. *J. carnea* is a valuable free-flowering species. We have seen specimens of it measuring 3 feet in height and 3 feet in circumference, and bearing 156 heads of bloom—the third crop of flowers in six months. Some account, therefore, of the treatment by which so remarkable a result was obtained with a plant not unfrequently seen 6 feet in height, with but a tuft of branches on its top, may not be unacceptable. The plant in question was eighteen months old. It was shifted out of a 3-inch pot into a 6-inch pot in August, and in this it was kept over winter till March following, when it was shifted into a 15-inch pot, in which it was flowered. It blossomed first in May, producing ten heads; in July it had ninety-two, and finally it was exhibited on the 5th of October in the condition described. After each respective flowering, the shoots were shortened in, and the plant was placed near the glass in a stove, whose temperature averaged about 65°. With the exception of stopping and regulating the shoots, it received little care beyond ordinary management, but that skillfully applied. The soil in which it was grown consisted of equal parts turfy loam and peat, to which was added a little sand and bone dust. It is, perhaps, but right to mention, however, that after the pot had become filled with roots, and consequently the soil partially exhausted, clear, weak, liquid manure was occasionally administered, which had the effect of preserving the foliage in the most healthy condition, its deep green setting off the fine display of bloom to better advantage, as well as, no doubt, greatly assisting its production. Magnificent as this plant was, however, it had a rival, in the shape of its near ally, *Aphelandra cristata*, one of the gayest of stove plants, when well flowered; but, unfortunately, this is seldom the case. The specimen to which we allude was a yard high, and about the

same through, bushy, and bearing twelve glorious heads of bloom, each consisting of from five to fifteen spikelets. This received nearly the same treatment as the *Justicia*. In the same house in which the above were grown was also an enormous *Allamanda cathartica*, which has had from ninety to 100 expanded blossoms on it at one time. This plant had been cut-in very much in spring; it broke strongly, however, and grew rapidly, but did not bloom well till late in July, from which time, until within the last few weeks it has continued in beauty. This plant has been found to delight in a soil composed of turfy loam, mixed with leaf-mould and sand. It should be kept in an airy house during winter—rather dry—and by having the wood well ripened in summer, so as to preserve it from damping off in winter, the plant might be made to bloom a month or two earlier than the one in question, whose treatment might be suitable for succession plants. Such *Gloxinias*, *Achimenes*, and *Caladiums* as have done blooming should be placed in cool houses, and kept quite dry. To those of the two former still in bloom, less water should be given; indeed, it is a good practice to have them all at rest before November, unless there are plenty of roots to spare. Those raised from seeds or leaves this summer, however, should be kept a little moist throughout the winter. Any withered leaves on *Caladiums* should be removed, so as to retain the beauty of the plants as long as possible. Some keep them in a growing condition throughout the winter, but that is not desirable.

Indoor Fruit Department.

Where the wood of Vines is brown and hard to the apex, and the Grapes ripe and well coloured, little fire-heat will henceforth be required in late Vineries. Admit abundance of air on fine days, and the temperature may be allowed to fall to 40° on cold nights. Keep the atmosphere sweet and dry, so as to prevent damping and improve flavour. Outside borders attached to houses in which Grapes are hanging should now be protected from excessive rains; for, where the borders are saturated with wet, Grapes seldom keep well. Shanking, too, which is the most destructive of all diseases to which Grapes are liable, is greatly promoted by encouraging superfluous moisture about the roots. Tared thin deal shutters, 6 feet wide and 10, or 12 feet long, placed so as to incline towards the front of the borders, form the best of all protectors; they last in good condition for many years, and they can be conveniently removed in spring, and stored until the following autumn. When in use, they should be elevated on bricks 3 or 4 inches above the surface; a circulation of air is thus kept up about the border, which assists greatly in keeping it dry. Thick tarpauling serves the same purpose as shutters; but I prefer the latter. Straw thatchings are sometimes used; but they are apt to retain moisture. Pines swelling fruit should be supplied with abundance of weak guano-water. As regards succession plants, slightly decrease the atmospheric moisture, that they may harden their growth sufficiently to withstand the vicissitudes of the coming winter. Keep the temperature for these and for fruiting plants at 85° during the day time, and 70° at night. In the case of newly-potted suckers, see that the bottom-heat does not get below 85° or above 90°. Shade them from bright sunshine, and keep the atmosphere of the house or pit in which they are growing close and moist. A damping overhead, early on clear afternoons, prevents the leaves from withering until roots have been formed. Queens intended for early fruiting, will now require very little water, perfect rest being what they need for two months. Keep the temperature for these at 60° during the night, and give plenty of air during the day time; on all favourable occasions let a free circulation of dry air pass through Peach-houses. Thin the leaves from about late fruit, and assist their ripening by means of a little fire-heat. Fig trees which have been grown in pots in warm houses, and which have been cleared of their crops, should be removed outside, and set in some sheltered corner, where they should receive a vigorous syringing by means of the garden engine, to clear their foliage of dust and insects. Keep the temperature about growing Cucumbers up to 70° at night. Young plants produced from seed sown a month ago will now be ready for planting out of pots into an open compost of loam and well-decayed manure. Sulphur any parts on which the slightest indications of mildew are visible. Water Strawberries in pots with liquid manure, and otherwise give them every possible assistance to enable them to produce strong fruitful crowns.—J. MUIR, Clovenfords.

Out-door Figs.

Figs out-of-doors are mostly a good crop in the eastern counties, and wasps are becoming very troublesome to them. One plan of baffling the wasps, is to gather the Figs before they are fully ripe, and lay them on a shelf or raised sieve in an early Vinery to mature. The latter is the best method, because the warm air surrounds and reaches all parts of the fruit; besides, in laying such a fleshy fruit as the Fig flat on its side on a shelf, we invite decomposition. But for

the extra labour involved, I should much prefer hanging up each fruit by its stalk. Either way, by gathering and storing in safety a few days before they are ripe, we remove a great temptation out of the way of the wasps, and save our Figs. Wasps, and even birds, are much more easily managed and mastered when they are not allowed to taste our best fruits; for this reason, I never leave decayed fruit exposed to their ravages. A second method is placing the fruit in bags, which should be large and stiff, so as to hang clear of the fruit, if not, the hungry wasps light on the sides of the bags and forthwith proceed to clip their way through with their mandibles. When the bags hang loosely they buzz round and round, and at last wheel off in despair. Bags of wire gauze would be preferable to muslin or stiff cheese-cloth for this purpose. Enthusiastic amateurs sometimes bottle their Figs, using wide-mouthed bottles, and blocking or corking them in; these not only protect the fruit from danger, but hasten maturity; and, in fact, furnish each fruit with a glass-house all to itself. It would take, however, very wide-mouthed bottles, indeed, to hold Brunswick Figs, which are particularly large this season. The quality, too, is remarkably fine, more delicate, juicy, and, in fact, superior in lusciousness and flavour to the Brown Turkey, or almost any other Fig grown in the open air. It is quite a mistake to stop the shoots of out-door Figs, at this season, to hasten the ripening of the fruit. Such stoppings have little, if any, effect in that direction, and do their best to destroy the crop for next year. It is a mistake to assume that when a growing shoot is stopped, the strength that was devoted to the extension of its parts, must necessarily be diverted into the ripening fruit. It is far more probable that the strength will be arrested altogether, by stopping growth which at least drew a full supply of vital fluid past the base of the fruits. But the greatest evil of stopping autumnal growths in Figs arises from the operation stimulating the young Figs in the axils of the leaves of the stopped branches to swell beyond the limits of safe wintering. What those limits are is not very clear, but a safe principle to act upon is the smaller the fruit the safer. Stopping, enlarges them, and, consequently, is an evil. Most of the protective means adopted to keep large Figlets on the trees to ripen next year fail. There is no difficulty in wintering them; but when exposed in the spring a late frost stings them through their hearts, and the sudden change of condition causes them to drop. Hence, for years past I have given up protecting Figs, and trust to a crop, that has seldom or never missed, from the small Figlets near the extremities of the shoots. No frost injures these, which, indeed, are hardly visible, and are, I presume, too much sheltered and wrapt up to be hurt by even the most severe cold.—D. T. FISH.

Kitchen Garden.

In most gardens at this season there are usually numbers of spare pits or frames, some of which should now be prepared for Lettuce and Endive, so as to have a supply under cover in the event of sharp frosts occurring in October or November. Pits which have been used for Cucumbers or Melons, if the manure is not immediately required for digging in the land, will require to have the soil on the top thoroughly stirred, all roots taken out, and, if dry, moistened, so as to have it in a thoroughly healthy growing condition. In thus making provision for autumn and early winter salads, every one, of course, must be guided by the demand they will have to meet. It is advisable, however, in planting a pit of several lights to select plants of different ages and sizes, for the sake of the successional character such a mode of planting will give—thus a light or more may be planted with half-grown plants that have been once transplanted, and the remaining space filled with the smaller and later sown plants. It will be found a better plan to plant now, where they can easily be protected when necessary, half grown plants (as the check given in moving them will be an advantage rather than otherwise), than to wait, as is commonly done, till frost is apprehended, and then hastily take up large full grown Lettuces, and stow them away thickly in frames, where the most careful management often fails to preserve in them that full flavour and succulency generally observable in plants that retain all their roots until they are required for use. I should, however, say that Endive is much more manageable in this respect than Lettuce. As regards varieties of Lettuces for winter, the Bath Cos should always be one of the varieties grown, and the Tom Thumb Cabbage, owing to its excellent flavour and quick growth, is also a very useful variety. Referring again, for a moment, to the question of transplanting: since the recent copious rainfall very rapid growth is observable in all kinds of green crops, and a certain grossness or over-luxuriance is not unlikely to take place, which will make them less able to stand a cold winter. This tendency can at any time be checked by partially lifting each plant with a steel fork; and wherever Broccoli are planted too thickly, half the plants may be lifted to form another

plantation, and, probably, the transplanted plants will turn out the most satisfactory crop. There is no occasion to use any protection to Lettuce in frames at present; give them all the air possible, and it would be as well to have stored somewhere a quantity of dry wood-ashes, or dry dusty peat, to scatter round and amongst the plants when the short damp days arrive, to counteract any tendency to damp or mildew. Mustard and Cress should be sown under hand-lights during the present month, after which it will be as well to sow in boxes in a warm house or pit. Steady fires will now be required in Cucumber-houses and pits; a night temperature of 65° with a bottom heat of 75° is quite high enough, if the plants were planted early enough to come into bearing by the time they will be required. Do not stop the leading shoots till the top of the rafters is nearly reached, and the plants will gain immensely in strength and vigour, which will all be required before the winter is over. Stop all side shoots one joint beyond the fruit, and dis-bud rather than prune if there is likely to be a superabundance of growth. If the hot-water pipes are fitted with evaporating pans (as they ought to be) keep them full of soft-water. Too much moisture at this season tends to produce soft watery growth, while too little is sure to bring on red spider and other ailments. The character of the weather must therefore in some measure guide both the application of artificial heat and moisture.—E. HOBDAY.

The Queen's Park.—The directors of the Artisans, Labourers and General Dwellings' Company have obtained a site of 80 acres in the west of the metropolis, on which the work of erection of a new city, to accommodate no fewer than 16,000 persons, is about to be commenced. The plans have been already drawn up and the roads marked out. This new city will be constructed on the same general principles as those which have been carried out on the Shaftesbury Park Estate, and no stronger evidence of the necessity of the work can be found than the fact that already, when not a single brick has been laid, applications for upwards of 1,000 houses have been made. The scheme has received the approval of the Premier, and, in fact, of all the distinguished personages who take an interest in the progress of the movement for providing suitable homes for the working classes. The share capital of the company, which was £250,000, has all been taken up, and is now increased to £1,000,000. The estate will be called the Queen's Park, and, like Shaftesbury Park Estate, it will be made as attractive as possible. Four out of the 80 acres will be appropriated in the centre to a garden and recreation ground; the roads and streets will be planted throughout their entire length with trees, and special inducements will be offered to the inhabitants to lay out the gardens both front and back in as tasteful a manner as their time and means will permit. These inducements have hardly been found necessary at Shaftesbury Park, for, long before the announcement was made that prizes would be offered for the neatest forecourt or best show of flowers, the inhabitants had been vieing one with the other in these respects, and during the past summer thousands of persons have visited the estate as much to see the various displays of flowers as to view the houses. The general style of the architecture in Queen's Park will be the same as that adopted in the estate at Clapham Junction, and there will, of course, be all the usual accessories to a town with a large population. The lecture-hall and institute will be a large and imposing building, and there will be co-operative stores, coal depot, dairy farm, baths and washhouses, and other buildings. The estate is near the Harrow Road, from which it will be approached, and there is constant communication with the district from various parts of London both by omnibus and rail. The foundation stone will be laid next month, when the work will be put in progress; but this ceremony will be purely formal, as it is intended to ask Her Majesty to lay the memorial stone early next season. There is to be no public-house on the property, and like the estate at Shaftesbury Park, every opportunity will be taken to promote and develop temperance principles. Reading rooms, discussion clubs, libraries, and other substitutes for the public-house, will be a marked feature.—*Times*.

The Gardens of the New Workmen's Cities.—Sir,—In reading the gratifying announcement about the Queen's Park in *The Times* of this day, it occurred to me how much better the little gardens would look if the wretched network of garden dead walls were abolished altogether. These shut out the light and air, and help to make town gardening more difficult than it need be. Besides, the appearance of the whole district will be very much injured by these walls, which are as evident in the new Shaftesbury Park as in any quarter of London. Everybody who passes out of London by rail must have noticed the dismal effect of these walls, forming, as they do, a kind of shallow well in which children and plants have a poor time of it, so far as inhaling the fresh breeze is concerned. If it be determined that separate gardens are best under the circumstances, surely it will not be impossible to find some fence or hedge that will be less objec-

tionable than these unsightly walls. Is it not a pity that the "flat" system is not adopted in these cases? The bane of London as a city is that it is in great part covered with mean houses with no sufficient space between for roads, walks, or trees. By the intelligent adoption of the "flat" system room could be found for all these necessities, and four times the number of people could be healthfully lodged on the same space of ground.—W. R., in *Times*, Sept. 17th.

BIRCHES AND ASPENS.

LOOKING out from my window upon the dark sides of the mountains, upon the massive clouds, upon the wind-blown trees, I see my pet, the Birch, all in a shiver with each blast. The American white Birch has all the grace and delicacy of its European namesake, and, besides, a sensibility which it borrows from the Aspen, or shares with it. One should have, near every country house, a group of Aspens and Birches. Planted together, they will give you motion in charming variety. On other trees the leaves are so rigid in the stem, that a wind strong enough to set them in full activity is strong enough to set all the branches in motion. We recognise the force, and, in large trees, the grandeur of motion. When a strong wind moves the whole tree, it swings its great boughs hither and thither, all its leaves and twigs utter their voices, which in chorus often rise to a roar. Yet, though the whole tree is agitated, and seems convulsed, one sees that it is only upon the exterior; while the top and sides are in full motion, the trunk stands firm, and seems motionless. Not till its very roots give way will it move, and then it does not bend, but goes down with stiff trunk. The elastic Birch, with long and slender limbs, avoiding horizontal positions and aiming at the zenith, flexible to the last degree, moves in the wind with a grace and elasticity which has no parallel. The American Aspen has a shivering leaf upon a rigid branch. It stands quite stiff and motionless in bough, while its leaves are quivering and shivering in the most industrious manner. Aspens are my wind-meters, or, rather, zephyr measurers. On a hot noon, when no air seems stirring, and the trees about them doze and slumber, like good men at church, these twinklers, like roguish boys, are dancing in an imaginary breeze, and playing with themselves, without a particle of wind, so far as I can perceive. Now a shiver runs over them from head to foot; then the topmost leaves shake and swirl, while the bottom rests. Gradually the motion dies away all over, and the frolic ends. No, a single leaf begins to wag; it goes on in single blessedness, with accelerated pace, up and down, round and round, until, for the life of me, I cannot help bursting into a fit of laughter at this solitary dance. At times, in certain moods, one cannot help thinking that the Aspen is striving to communicate something. It seems to sigh and pant. It supplicates as one that suffers. Then, changing suddenly, it coaxes and winks and blinks at you as if it was only in fun. It will stand perfectly still a minute as if looking to see what you will do, and then a laughing ripple runs all over it. It frolics with the same tireless grace as a kitten. Indeed, it is a kind of compound kitten-tree, each particular leaf a kitten, all frolicking together; though there is not one of them, if the rest won't play, that is not ready, kitten-like, as it were, to chase its own tail. Why have landscape gardeners done so little with Birches and Aspens? Maples, Oaks, Ashes, and evergreens are very well; but in what other direction shall we look for such grace in form, such susceptibility to aerial influences, and such exquisite motion of both branch and leaf, as we find in the Aspen and Birch? The Birches grow rapidly, are extremely hardy, and will flourish upon poor soil, though loving a generous soil better. In ten years, with Birch and Aspen, one may rejoice in a thick grove. If the yellow Locust be added to these, and the silver Maple, one who plants at sixty may hope to see, high over his head, a respectable young forest, dense enough for shade and high enough to begin to comfort the imagination. Long live the Aspen and the Birch! Only the young have just grounds for prejudice; but even boys soon outgrow the Birch, and watch its sinewy motion without a thought of moving, too, in shivering accord. H. W. BEECHER.

Effect of the Californian "Rattleweed" on Cattle.—According to the *San Francisco Chronicle*, a plant called "Rattleweed" is producing a most destructive effect upon horned cattle. The "Rattleweed" grows to a height of about 18 inches, and has a leaf similar to that of a Lupine. It has an immense number of pods, which are of a light brown colour when ripe, and of a three-sided form, like the Brazil nut. These pods do not crack open when ripe and dry, and as every pod contains half a dozen or more small loose seeds, it forms a rattle, producing, when touched or moved by the wind, a clear sharp sound, resembling the warning of the rattlesnake. It is found—sometimes in small detached clumps, and sometimes in patches covering many acres—in Kern, Tulare, Fresno, and Monterey counties, and in the northern part of Los Angeles. The effect of this

weed when eaten by animals is to produce insanity, or, to speak more accurately, it appears to derange and "befog" their instincts, and, judging from their actions, fills them with delusions. When thus affected many of them die, but whether death is the direct effect of the poison, or whether it results from their inability to procure water and food, is, as yet, unknown. Several hundred horses have lately died from the effects of this weed in the southern part of Monterey County, and a correspondent of the *Chronicle*, who lately lost fifty horses on one rancho from the same cause, describes the symptoms that were apparent in the ill-fated animals previous to their decease. They became (he says) too muddled to seek for water, and many of them died of thirst. Although they were wild and had never been handled, any person could walk up to them on the plains and hit them with the hand, when they would jump, perhaps straight up in the air, perhaps some other way, and go off as though they were trying to leap over a fence at every step. They seemed to retain their sight, yet would not turn aside for anything.

Trees in Printing-house Square.—*Apr*opos of the imaginary difficulty of growing trees in London we may mention that in passing the *Times* office the other day with Mr. Charles Moore, Director of the Sydney Botanic Gardens, we were both much pleased and surprised to see two unusually good specimens of the North American Shubby Trefoil (*Ptelea trifoliata*) in perfect health. We have not seen better specimens in any botanic garden, thus affording another proof of what we have often expressed, *i.e.*, that deciduous trees are as easily grown in London as anywhere else.

The Pelargonium Society.—Dr. Denny is right in saying that Mrs. Turner and other Pelargoniums with large trusses of flower are too good to be grown out-of-doors; we do not want all Pelargoniums for bedding purposes; on the contrary, pot-culture is quite as essential in many cases as bedding. The time will come, and is, indeed, not far distant, when Pelargoniums will play a conspicuous part in greenhouse and conservatory decoration, blooming, as they do, the greater part of the year. In order to encourage size of truss, shape, colour, &c., I would suggest that prizes should be awarded for a single cut truss of the largest dimensions, in various classes and colours. Also that prizes be given for the best thirty-six dissimilar blooms (cut), twenty-four ditto, and twelve ditto. Also prizes for the best six cut trusses, new, or not in commerce. They should be shown in stands similar to those in which Dahlias are shown. This would greatly add to the number of exhibitors.—EDWARD BENNETT, *Hatfield, Herts.*

Competitive Examinations.—"Examinations are such as in a great measure to mar the main intention of the work of education. The examinations involve impossible attainments on the part of students. A burden is laid on them heavier than they can bear. The result is cram-work and failure. They know something of everything, but little thoroughly of anything." "Within four years students have to overtake, and are presumed to master, a large number of subjects—any one of which might well be the occupation of a life. The sad, the disastrous thing for students, is, that the range or measure of the pass examinations on every branch is co-extensive with the whole literature of each. The examinations are indefinite—undefined; they are whatever examiners choose to make them; and examiners are not always discreet. They have their whims, their fancies, their hobbies. Not seldom they carefully get up the night before (and from big books on their shelves) for examination purposes on the morrow, what they themselves will forget directly the examinations are over. . . . A student may pass with credit at one board and yet be rejected by another." Sir Robert Christison is reported to have said that nothing is easier than to reject a candidate trained at a different school from that of his examiner. Students have now no time for original thought and research—the only real proof of merit. The examinations "leave no time for aught save cram-work with the grinder." . . . "It is sometimes said—and in a boastful way—that the attainments of students in these days greatly exceed those of the students of former days. In a certain sense this is true. But what if these attainments are proportionably shallow—fragmentary, a mere smattering of things?"—*Syllabus of Materia Medica.*

A Peach Stealer.—A Worcester boy was engaged in nocturnal Peach-stealing a short time ago, and was observed by the owner of the fruit, who, unnoticed by the young robber, placed a large stuffed dog at the foot of the tree, and retired to watch the result of his strategy. The boy, descending, observed the dog, and then the fun commenced. He whistled, coaxed, threatened, unavailingly, the animal never moved. And, finally the youth, accepting the inevitable, settled down to passing the night in the tree. After some hours had passed wearily enough to the lad, morning dawned, and the proprietor of the tree, coming from the house, asked him how he came to be in the tree. To which the boy answered that he took it to save himself from the dog, who had chased him for a long distance.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

ENJOYABLE GARDENS.

SHALLOW people have sometimes wondered how Lord Bacon, who was a philosopher, statesman, and lawyer, should have thought it worth while, in his "Counsels, Civil and Moral," to introduce an essay on gardens. What, they ask, have gardens to do with things civil and moral? The first lines of the essay itself justify its place among moral themes. A garden was first planted by our Creator, "and, indeed, it is the purest of human pleasures; it is the greatest refreshment to the spirits of man, without which buildings and palaces are but gross bandyworks." In Bacon's time Puritanism had not turned old English heartiness sour, nor stigmatised pleasure and the love of it as sinful weakness of the flesh. Refreshment for the spirits of man was yet held an allowable and even praiseworthy thing to aim at. Pleasure ranked among supremely moral matters, as we are once more beginning to see, though perhaps there is a less intelligent apprehension than one could desire of the true ingredients of the best kinds of pleasure. If we look at the popularity of gardens, for example, it is plain that men have not yet, as a rule, in England acquired a just taste for this purest of human pleasures. At Sydenham, where there is one of the most delicious gardens possible, in its own style, the gardens draw less by a thousand times than a Shah of Persia, or an acrobat wheeling a barrow along a rope. Even people who really plume themselves on their passion for gardens are constantly found, perhaps in the majority of cases, actually not to know what a garden is, and to believe that a passion for gardens means a passion for acres of Grass with countless flower-pots and endless supplies of heated air underneath. A man with a true love for gardens, when he goes down into the country to stay with somebody with a great reputation for flowers, knows by this time what he has to expect, and how little his own taste will be pleased. It is not the gardener but the glazier whose glories he is taken to see. Horticulture is a misnomer for viticulture. Instead of a ramble along green-sward in the free air, laden with fresh scents, he traverses weary miles of glass-covered walks of brick, in an artificial and languorous atmosphere, surrounded by flower pots and water-pipes. The whole thing is only a shade less distasteful and tiresome than a laboratory. Perhaps, in addition to this enthusiasm for glass, the host has a passion for Latin names, which he insists on inflicting on men who neither know nor care about the niceties of floral classification. This horticultural pedantry is particularly disgusting, because it really gives no single atom of instruction, and has no single element of suggestive knowledge about it to those who have not been trained in the subject. And you mostly find, too, that the horticultural amateur who is most tediously particular about his Latin names for things, has the least possible knowledge of the general ideas that belong to the study of botany. His knowledge is all empirical; it has no growth in his mind, and only consists of a bundle of detached and disconnected labels. Botany, rightly studied, is one of the most instructive and useful, as well as one of the most delightful, of all the concrete sciences, because it is so simple and so perfect an example of a truly scientific classification. But your fine horticulturist, all glass and Latin as he is, extracts as little as possible of the true worth of his study from his vast legions of flower-pots and specimens and labels. One wonders why these people, who bore one to death with the special names of this flower and that, do not insist on letting you know the exact name of the Grapes, Strawberries, and Cherries at dessert, all in botanical dog Latin. Of all impostors, viticulturists seem to be the most egregious. They are endured, and their tribe waxes more numerous, because they offer a good opening for that vulgar ostentation which is so charming a feature of our society. You can spend an immense sum of money in glass, and flower-pots, and hot air. *Argal*, they contain the one essential of right

pleasure. Into Bacon's conception of a garden, it is true, though he asked for thirty acres of space, the glass-house did not enter. But then, in his time, the measure of the refreshment of spirit which men could get out of a garden or a house was not simply the amount of money which could be put into it. We are so much wiser now than the Elizabethans. What Elizabethan ever made £100,000 in a single year by luck in dry goods? For moderate men thirty acres of space are usually much more than they can command for a garden. Gardening on a large scale is costly in the labour which it requires, even if land were cheap, which it certainly is not. You may have ample "health and sweetness" in tinier plots than thirty acres, provided your garden be not surrounded by high brick walls in the old and perhaps also the modern manner. Even with them one may not fare very badly. There are some charming old gardens in the Twickenham and Hampton country, though they are mostly as rigidly enclosed within four walls of brick as the parlour or the sleeping-room. In a sense, gardens of this narrow and curtailed size and sort are in the nature of apartments of the house, and very gracious and pleasant chambers they are. Even in those wildernesses of houses which are spreading far and wide in the suburbs of London and the other great centres, the little square spot at the back door is not laughable, judged from a proper point of view. It is not a garden in the sense in which Hampton Court Palace or Kensington has gardens, any more than the rooms are rooms compared with the saloons of the palace. But it is an open-air chamber in which, of a summer evening, a man and his wife may delude themselves most agreeably and profitably into the notion that they survey the loveliness of Nature and the marvels of Creation. Why should they not? There is not nearly so much illusion in these humble delights as there is in the costlier delights of more ambitious folk. Still let us agree that narrow and walled spaces, with flowers, and strips of turf and gravel, are not gardens in the truest sense, in which gardens deserve to have all good things said of them. For these, space is essential; but, then, it is not indispensable that the space should all lie within one's own private and particular domain. A fair and wide prospect is as much mine as if I held the fee simple of every acre. The "magic of property" may make an ugly bit of land fair; but a man must have fallen into a bad way if he finds a fair view from his window ever cloudy and loveless, just because he does not possess the parchment title to it. Granted that your morality in this respect is sound, to acquire for a garden all that a Bacon could ask in it, the one thing needful is to plant it on a height looking over a spreading weald, or down into a pleasant valley; or to place it in a prospect of distant hills and downs. In such a case it matters not a jot whether the garden be thirty acres or half an acre. We have no need of Bacon's six acres of "heith or desert" in the garden, if there are miles of heath on any side of it; nor of his four acres of green in the entrance, if there are grassy downs within a mile or two. If rightly placed, a garden, to be full of delight, need be no more than a broad and ample piece of well-kept lawn, with flower borders and fragrant hedges. All that you want a soft and pleasant carpet for the feet, little pieces of bright colour for the eye, gracious prospects, and the perfume of Honeysuckle, Thyme, and the like. There must be also a sheltered walk with gravel for the winter days and nights. But it is a vile blunder to cut a garden up with gravel walks, which are pleasant to no sense. And the worst of it is that in not one garden of a hundred are those walks broad enough for three persons to be abreast with full comfort. People unaccountably prefer a couple of narrow strips to one broad alley. And it is hardly a less blunder to take up space with craftily-devised flower beds, or many cunning combinations of form and colour. As Bacon says of the similar knots of figures in his time, "You may see as good sights many times in tarts." For the main point in a garden, if it is to be for the great refreshment of the spirit of man, is simplicity. The simpler it is the fewer chances are there of its getting out of order, and so disturbing the eye and mind of its possessor. To idle men who have nothing better to do than to make the garden a business, this will not count. But to busy and absorbed men, the avoidance of every slight root of irritation and the corresponding gain of serenity are worth anything. Nor are complex and artificial pleasures ever really

soothing. They may distract or divert, but the use of a garden is that it diverts without stimulating. It composes the mind, even in the midst of the gravest cares, to a wholesome passivity. The anxieties of the world, cares of business, excitement of politics, are reduced and paled in a man who can enjoy the sweetness of a homely garden. But a garden that is a show place, or the imitation of a show place, is no more refreshing to the spirit of a sensible man than the sight of a ball-room crowded with beauties and dandies. [There is a considerable amount of truth in the above from the *Pall Mall Gazette*. The reference to Sydenham, however, where an "acrobat or a Shah of Persia" draws so much more than the gardens, makes us add a few words, to point out how much our public gardens are deficient of the very qualities to which the writer clearly enough sees, are the vital ones. We quite agree that "it is a vile blunder to cut up a garden with gravel-walks, which are pleasant to no sense;" and it is equally bad to cut up the surface with other things; look, for example, at a plan of the Crystal Palace gardens, and see how the whole central parts of the landscape is destroyed by vast fountain-basins. And look at Leicester Square, or, indeed, any of our new London public gardens, and you will find the surface cut up in the most important parts by walks, mostly needless. The planting or the bedding-out complete the confusion, and destroy all repose.]

WINTER GARDENS AND AQUARIA.

We shall soon have various excellent opportunities for the formation of winter-gardens, Ferneries, indoor rock-gardens, &c., in connection with the rather numerous aquaria now being got up, and it is to be hoped these will be taken full advantage of from a gardening point of view. Partly in consequence of the great success of the Brighton aquarium, and partly from other causes, the rage for such structures is rapidly spreading. As it is a fashion which leads to one of the most wholesome sources of pleasure—the gratification of interest in the hidden beauties of Nature, it can scarcely spread itself too widely. Fish life, and submarine plant life, had been mysteries to the general public till the first attempts at aquaria lifted a corner of the veil which had so long covered the secrets of the sea. The revelations, though so scanty, were yet so interesting, that the attempt thus to popularise a knowledge of ocean life became at once a success, and miniature aquaria, with sea Anemones and nest-building sticklebacks, were to be found in numerous dwellings. The large dimensions of recent aquaria, from those of Paris to those of Brighton and the Crystal Palace, have opened up a far more extensive and instructive vista into marine life than hitherto existed; though, looking at the matter from the gardeners' point of view, marine plant life has not at present been sufficiently attended to and illustrated. Still, sufficient has been done to arouse public attention very remarkably, and we consequently hear of projected, or even already progressing, aquaria in many quarters. Winter gardens, too, have at last started suddenly into public favour, and excited almost as much public interest as the popular aquaria themselves; indeed, we now generally hear of winter gardens and aquaria as twin structures, more than one of which is now promised in London itself, which has been, up to the present time, somewhat behindhand in such matters. From the point of view assumed by THE GARDEN, terrestrial winter gardens are, of course, more important than aquaria. During the long winter months Londoners have no pleasant promenade in which a lounge can be enjoyed in the midst of flowers and green foliage. The Crystal Palace is too distant for a very numerous and yet very appreciative class; while the noble Palm-houses and other plant buildings at Kew are rather suited for the purposes of study than as areas in which winter promenades, in the midst of vegetation, can be enjoyed. In several parts of London it has been more than once proposed that spacious winter gardens should be established; but such proposals have, till now, found neither sufficient seconders nor the ways and means to carry them into execution. At last, however, an announcement has come forth from the "Royal Aquarium and Summer and Winter Garden Society," stating it to be their intention to establish a marine aquarium on a large scale in Westminster;

and also a winter garden. Even another London aquarium is proposed, having for its site the Thames Embankment, doubtless to be combined with a winter garden. With such decided successes in view, as the aquarium at Brighton and that at the Crystal Palace, it appears somewhat singular that the metropolis should have remained so long without a marine aquarium and winter garden of dimensions and general importance worthy of our great and wealthy city. Some have endeavoured to account for the delay by the distance of London from the sea; but with our present engineering knowledge at command a daily supply of sea-water either for marine baths or aquaria present but comparatively trifling difficulties, and we hope at last to see such difficulties triumphantly overcome, and that marine aquaria upon a larger scale than anything hitherto attempted, may be successfully established. It is the scale, in fact, that marks the difference between a mere toy and a structure that may command the admiration and approval of our greatest naturalists, as forming a school of instruction in a very interesting branch of science, by means of which many important questions may be solved.

H. N. H.

THE WASTE OF WATER.

It is not without cause that the long drought, from which we have at last a prospect of being relieved, has turned the attention of cultivators to the singular one-sidedness of our dealing with that element we have so long felt the want of. Water is a good servant, but a bad master, and in our elaborate and persistent struggle to emancipate ourselves from the mastery, we forget the service, and find ourselves destitute. For the living generation, nothing has been talked of so much in this country, as how to get the water off the land as quickly as possible. Old people may, perhaps, remember exactly when this national hydrophobia first showed itself, but it certainly was aggravated by a series of wet summers, early in the century, conspiring with circumstances which made Wheat almost the exclusive object of attention. The first maxim of British husbandry was—"Look to the Wheat harvest for your profit," and the laws said the same thing; so it followed, as a matter of course, that water was regarded rather as the enemy of the Wheat crop than as the friend of the pasture, the flocks, and herds. Everybody who has had to do with land, has been mulcted a good per-centage of his income for drainage of all kinds, surface, deep, and arterial, as if water were simply a curse, and never a blessing. For fifty years the towns situated on rivers with low banks, have been complaining loudly that, whereas the waters formerly came down sluggishly enough, giving them a damp month at a time, and rendering the meadows marshy, they now come down at short notice, in a three days' deluge, leaving them soon dry as before. Of course, there was much to be said on both sides of the question as regarded the towns; but it has become evident that both sides of the question have to be considered in the case of the country too. Four-fifths of the hay crop of this year were lost; what remained was a mere raking, which it was pitiable to look at as the chief provision for our cattle in the winter. Of course we were promised a rainy August, a lingering autumn, a mild winter, and an early spring, with abundant root-crops; but all the farmer sees are a few ricks which would not stand a month's siege by his usual stock. Meanwhile, in by far the greater part of the country, there is water not only within reach, but fully at command. There are streams, or springs, or wells, or wells easily made, or a surface favourable for the collection of the water. Sometimes, in more than one place in a single field, there will be spots where water settles, or where it oozes out, and which, consequently, the tenant regards as running sores to be cured by the miraculous touch of the landlord. Yet nothing is ever done to husband that which sometimes is found grievously wanting. In no country in the world that an ordinary tourist sees is there less provision or method for the collection and distribution of water. Here and there, where Nature almost compels, there are water meadows, often as old as the Romans; but, under ordinary circumstances, no one ever sees canals for irrigation, tanks for irrigation, or devices for raising water to such a level as shall command the surface. A windmill for this purpose, a steam-engine, an hydraulic ram, a bucket-wheel, or any of the simple devices to be found even among African savages, would be thought a madness here. In fact, nothing is done to supplement the defects of Nature, except on a small domestic scale, and as expensively as possible. Generally we allow even our gardens to be ruined by the first drought, unless we can spend a fortune in water-towers, piping, steam-engines, and skilled workmen. We cannot remember to have seen at any of our exhibitions—international, agricultural, floricultural, industrial, or cottage—any simple contrivances for

raising water within the scope of small people. Apparently, it is easier to drain a lake than to water a kitchen garden. In many cases all that is to be done is to get the water hoarded or raised to an elevation dominating the ground to be watered. A locomotive engine would do it much more easily and cheaply than is commonly supposed. Fire-engines are not constructed for this purpose, but only to shoot the water as high as possible; yet they throw hundreds of tons in a few hours. It is only a question of management to make power do its work. A London housemaid thinks nothing of going to the top of a four-story house twenty times a day. A proper application of that power would raise a ton of water 20 or 30 feet, and in the course of a twelvemonth would most thoroughly irrigate even more than half an acre of garden. Now, everybody, from the master of the house downwards, if he be in health, has superfluous strength to keep down. Nature itself tells him that, and accordingly he goes forth several times a day, in the impulse of muscular irritability, to do some work or other—to walk a mile, to dig, to chop, to prune, to plant, to destroy. Boys, especially, want an object, and do not much care what it is. Now, why cannot our mechanists make some simple kind of apparatus whereby this strength, instead of going to waste, may prevent water from going to waste? The usual way of raising water from a well in this country is very wasteful of strength. It does not employ the whole body or the whole weight. A woman with great effort raises a bucket, we will say, ten times a day, and in so doing she raises, not a ton of water, nor half a ton, nor a quarter of a ton, but only half a quarter—that is two hundred weight and a half. The same consideration applies to the sanitary arrangements of decent houses. Forcing pumps are a very costly and laborious method of raising water—that is, when it is raised by human power. T.

THE CHRYSANTHEMUM.

THE cultivator who looks ahead is now hard at work at the Chrysanthemum, a plant that will keep his houses gay from October to December, and so carry him over one of the gloomiest periods of the "plant year." The Chrysanthemum is a plant that everybody, even to a child of a London court, may be said to be acquainted with. This is because it is blessed with a decidedly strong constitution. It can be grown almost anywhere. In the public gardens of London, where other plants appear to be half choked with smut and grit, it may be seen sprouting vigorously; in the window of the mechanic's dwelling in a London street it seems to fare best of all, and almost beats the Fuchsia, that king of window plants. The ways and methods of cultivating this plant may be termed legion. The rough-and-ready plan of rearing it for market and for cut flowers is to strike cuttings in a hot-bed early in April, and directly they have struck harden them off, pot into large 60's, and plunge the pots up to their rims, and directly they have got tolerably well rooted pot them into large 48's, and flower them in these pots. If the plants have been judiciously pinched, and never allowed to suffer from dryness, they will by the latter end of October present a vigorous head of bloom. This, however, is a very rough way of rearing them; for, although they flower well, they will not bear the appearance, health, or size of a well-cultivated plant. To have a well-grown Chrysanthemum suitable for the conservatory stage, robust cuttings should be taken from the old plants about the first week of April, and placed two in long thumb pots which have previously been filled with well-mixed soil of loam, leaf, and sand, with a good coating of sand on the top. The cuttings should then be dibbled in and plunged in a frame on a good fresh dung bed. Many advocate an ordinary propagating frame, but the dung bed will be found more suitable, as giving to the plants the moist warm atmosphere that is so essential to them, and which often secures them from the attacks of red spider, &c. If the cuttings have been carefully put in, they will, in a day or two after, present a healthy appearance, being upright, and wearing a fresh green aspect. For the next fortnight they should be gently syringed and kept shaded, with only just a slight amount of air on, which should, however, be widened as the plants appear to gain strength. In about sixteen or eighteen days the pots will be well filled with roots. Then, choosing a warm genial day, remove them to an ordinary cold pit, and, placing them evenly in the ashes (or tan), keep the pit closed and shaded till they recover, when they should, for a day or two, be gradually exposed to the sun and air, and at last have the pit-lights off together during the day, except when it is cold and wet. In a fortnight from their removal from the dung bed they will be quite ready for their first shift, which should be potting each cutting, or rather by this time young plant, singly in large 60's, using one part loam, one of sand, and two of leaf mould, and, if obtainable, one of horse filings, which will strengthen the plants perceptibly. Having got settled in their fresh pots, they must be exposed at every favourable opportunity, and have plenty of water, and once a week liquid manure, rather

weak. About this period they may have their first pinch. This is a process that must be carried out with care, as on it depends the shape of the plant. The first pinch must be so as to allow the plant to start with four good robust leaves; and this will cause the plant to shortly bristle with side-shoots, which, when fit to handle, should have their tops taken off, and so on until the middle of July, when the pinching off shoots should be discontinued, and the plant allowed to grow freely. Towards the end of May the plants can be shifted into large 48's, and again plunged in the frame, taking care to give them plenty of room, and in another fortnight they will be fit for large 32's; in this shift plenty of horse filings should be mixed in the soil. About the middle of June, or earlier, if the season is warm, they can come out of the pit; and, choosing a nice hard piece of ground exposed to the sun and rain, a bed of coal ashes can be made up on it and the plants plunged. By this time they will have attained a good size, and, through the pinching, will have a supply of vigorous branches, so that particular care should be taken to give them copious waterings and syringings, and about twice a week a good dose of strong manure-water. All July they will be growing very hard; and about the first week of August, when a good many of the garden hands can be got together, give them their final shift into 16 pots, getting them done as quickly as possible, so as to keep them at the same stage of growth. They should be again plunged, and will want nothing more than plenty of water till the end of the month, when they should be staked, which should, of course, be performed so as to have the plants round and uniform, the tall branches in the centre, with the smaller ones round the outside; and this plan will be found to be one of the best and simplest to show up their beauty. It is best to get them into a spare greenhouse about the second week of October, just before the first frosts come. The Chrysanthemum is a plant that is better without heat; yet, by this, I do not mean that it should be exposed to cold and damp, but that a temperature of 45° or 50° will keep it in health when blooming. This plan of growth will answer about the best of all, when there is a big conservatory to fill; and it is a plan that with ordinary care will seldom fail to give satisfaction. The one important thing to bear in mind in rearing this plant is, that it is a vigorous feeder—it may be indeed called a thorough gourmand; it therefore can hardly be overfed, and, in addition to the horse filings, some good manure might be mixed with the soil. Of the Anemone-flowered kinds I would recommend Antonius, Emperor, Prince of Anemones, Astrea, and Lady Margaret. Of the Japanese varieties, Bronze Dragon, Prince Satsuma, and Tassel Yellow. Of Pomponé varieties, Mrs. Dix, Helene, Aigle d'Or, and Rose Trevenna. Of the ordinary crimsons, Albion, Dr. Sharpe, Captivation, and Sam Slick. Of the lilacs, Fingal, Venus, Ossian, and Lady Slade. Of the yellows, Gloria Mundi, Golden Nugget, Yellow Perfection, and Golden Queen of England. Of the whites, Beverley, Mrs. Geo. Rundle, and Virgin Queen. These are mostly old varieties, but, nevertheless, they are well-tried ones, and will, perhaps, give greater satisfaction than the more modern productions.

Highgate.

G. G.

Proposed Changes in the Botanist Gardens, Hull.—At a recent meeting of the Cottingham Local Board, it was mentioned that Councillor D. P. Garbutt, of the Hull Town Council, intended laying out for building purposes an estate of 230 acres just outside the borough and adjacent to the park. The proposed drainage for Cottingham, near the estate, is to be enlarged, and six or seven boulevard streets constructed, drains filled in, trees planted, and work done at a cost of about £80,000. The estate is to be called the Westbourne Park Estate, and in the boulevards are to be "circuses" with fountains. Mr. Garbutt has offered to take the present Hull Botanical Gardens at a valuation, and to sell from 20 to 30 acres on the new estate on reasonable terms.

Japanese Mulberry Trees.—When a people contrive to make saucepans, fine pockets handkerchiefs, and sailors's waterproof coats out of paper, they may be considered to have mastered a useful art, and this is demonstrated by the above articles of Japanese manufacture, with the additional little circumstances that the saucepans are generally used over charcoal fires. According to their own account, these ancient islanders wrote upon silk faced with linen, and also used very thin wood shavings for the same purpose, until nearly the third Christian era. About A.D. 280 paper was first imported from the Corea, and, superseding the home made fabrics, monopolised the market until the year A.D. 610, when the King of the Corea sent two priests to Japan to establish the manufacture. This paper was easily torn, and liable to be destroyed by worms, and, besides did not take the ink well. These manifold disadvantages attracted the attention of Taishi, the son of the reigning Mikado, who substituted as material the bark of a species of paper Mulberry, which is still extensively cultivated for the purpose.

NOTES OF THE WEEK.

— MESSRS. GARCIA, of Covent Garden, have sent us some specimens of huge Walnuts, which weigh, as they are gathered from the tree, $4\frac{1}{2}$ to $5\frac{1}{2}$ ounces each. They were grown at Teddington by Mr. Vanderlynden, and are well flavoured and, in other respects, perfect fruit of their kind.

— It is scarcely worth while to pollute the air of the London parks by burning weeds in them, as is now done in Kensington Gardens. Those who take the otherwise pleasant walk from the Queen's Road, Bayswater, to the western end of the "Row," and in doing so have to pass through clouds of offensive smoke, will, probably, agree with us, that a few waggon-loads of wood-ashes are dearly bought at the price of such a nuisance.

— We are glad to notice a great improvement in the way in which plants are labelled in Hyde Park. The circumlocutory, and almost useless, numbering system has been done away with, and a really good pattern of iron label, so written that it can be easily read, has been substituted. The only slight blemish now is, that many of the generic names are contracted thus—Pelar. for *Pelargonium*, and so on. For the sake of the general public, it is desirable to avoid such awkwardness, especially as nothing is gained by it as regards expense.

— A SPLENDID specimen of the Dove Orchid (*Peristeria elata*), is just now bearing six or seven fine spikes in the Royal Exotic Nurseries, at Chelsea. This is the finest specimen of this plant which we have ever seen. In the same establishment we also noted a richly blotched and large-flowered form of the chaste *Odontoglossum Roezlii*, the blooms of which are even finer than those represented in the last number of Bateman's "Monograph."

— A LOCAL paper reports a great abundance of fruit in Gascony. The trees and Vines, it says, are so loaded, that the branches threaten to break down. Peach, Plum, Apple, and Pear trees have had to be propped up. Peaches, weighing three to the pound, are being sold in the streets of Toulouse at 6d. a dozen, and fine Grapes at 1d per pound. In the country, 100 Reine Claude Plums can be bought for 1d. or 1½d.

— A LETTER was read on September 14th, at the Paris Academy of Sciences, on a particular toxic action exercised at a distance by *Colchicum autumnale*, at the time of flowering. The hand, when held near the anthers of the flowers, without coming into actual contact with them, changes in a few seconds to a livid greenish-yellow colour. The natural colour returns about ten seconds after the removal of the hand. The author believes that this remarkable action is chiefly exerted during or near the period of fertilisation, and proposes to examine further the nature of the substance emitted.

— COLCHICUMS, and other hardy autumn-flowering bulbs, are just now very beautiful in many gardens and nurseries near London. In Messrs. Osborn's Nursery, at Fulham, we recently saw nice clumps of *Colchicum autumnale*, *C. album*, *C. multiplex*, *Sternbergia lutea*, and the beautiful deep blue *Crocus speciosus*; while, elsewhere, we have seen fine masses of the *Belladonna Lily* and the vivid scarlet *Schizostylis coccinea*. In Mr. Rucker's garden, at Wandsworth, too, we recently saw a splendid specimen of the noble *Crinum capense*, flowering freely in the open air, in a position which it has occupied for several years.

— A FLOWER show has been held at Salt Lake City, at which the fruit, flowers, and vegetables, are reported to have been excellent. Dreary as is the aspect of the deserts of Utah, fine products are obtainable there by the aid of water; and when we visited the "City of the Saints" in 1870, the Vines, Tomatoes, and Apples, looked as promising in the gardens of Brigham Young and Brother Jennings as in most other parts of America. A novelty in the way of prizes seems to have occurred to the Salt Lakers. "A basket of flowers proffered to the young lady under eighteen years of age who could tell the most names of the different flowers on exhibition, was awarded to Miss Sarah Ann Walker, daughter of Mr. D. F. Walker, who gave the names of eighty-one of the varieties.

— THE "Heatherside Manual of Hardy Trees and Shrubs," a copy of which we have just received, deserves more notice than we usually bestow on such trade lists. It is alphabetical in arrangement, and forms a useful dictionary of most of the hardy ligneous plants in cultivation. Its value, too, is especially enhanced by both common and botanical name being given, and it is all the more welcome because it is one of the first attempts that have been made to make a trade list a really useful manual of reference; for, many besides ourselves must often have experienced considerable difficulty in finding the names of even common plants in ordinary lists. For instance, *Arbutus*. Are we to look for it under the head of shrubs or of evergreens, or by its English name of Strawberry tree? Or the Larch. Is it to be found in ordinary catalogues as a deciduous tree or as a Conifer, or by its English name, Larch, or under the head of

forest trees? and with plants that are less known the difficulty, of course, is greater. In the Heatherside manual much of this uncertainty is removed, and the result is a catalogue that should find a place in every garden library.

— IN the corridor at the Royal Exotic Nursery, Chelsea, there is a plant of the White *Lapageria* now bearing about 310 of its beautiful flowers.

— WE understand that Mr. Max Leichtlin's collection of *Lilium dalmaticum*, recently obtained by him in Montenegro, together with other bulbs, has passed into the hands of the New Plant and Bulb Company, at Colchester.

— It is to be regretted that some of our leading botanists and scientific men (generally so hard on anything tinged with the sensational) have been themselves of late indulging in a little clap-trap at the meetings of the British Association and elsewhere. A notable instance of this is the so-called "Carnivorous Plants," a name in itself a piece of "sensationalism" of a very poor type. There is, no doubt, much that is curious in these interesting plants, many of them long well-known in good collections, and the keenest observers are well employed in studying their peculiarities; but it is much to be regretted that statements about them should be made which are quite unjustifiable by the facts of the case. The cuts in last week's *Graphic* follow the same cue. A state of things is there depicted which (and all those who know the plants well will testify to the truth of what we say) is quite beyond the facts. But it is when we come to read the description of the illustration, that the results of recent British Association teaching may be best seen. "As our readers will see by reference to the engraving, these plants are furnished with various kinds of traps or snares for the unwary insects upon which they live. The *Sarracenia*, the large plant on the left of the page, the *Nepenthes*, in the centre, and the *Cephalotis*, which is immediately below it, have lids which shut down upon their victims. The *Darlingtonia*, shown on the right, curls its leaf around them; the *Pinguicula*, in the right-hand bottom corner, shuts itself up and curls its leaves; the *Dionaea* on the left beneath the *Sarracenia*, also shuts itself upon its prey, and the *Drosera*, in the left-hand bottom corner, has an arrangement of fine lines ending with little knobs, which it throws over its prey, and thus secures it." There are several statements in this short passage which are not merely doubtful, they are wholly false. We refer more particularly to the "lids which shut down upon their victims," and to the assertion that the "*Darlingtonia* curls its leaf around them." This is ridiculously untrue, as we can testify, from having spent many days in one of the habitats of the plant in California. We also agree with Mr. Andrew Murray, who, writing in a contemporary, says, referring to "the digestion of the fly or albuminous matter by the plant. I cannot believe in feeding without a mouth, or digestion without a stomach. We are not dealing with an amoeba, but with an organism whose operations Dr. Hooker compares to those of the human stomach. His position is, that it digests 'the same substances, and exactly in the same way, that the human stomach does.' As to the substances being the same, it comes to nothing. There are two agents at universal work all over the world, engaged continually in dissolving what can be dissolved—the stomachs of animals, and the agents of natural decay; their action is similar, and their powers limited by the same bounds. But when we come to the plant digesting in exactly the same way as the human stomach does, I am entitled to ask—where is the apparatus by which it does so? Had he said in some way analogous to the operation of digestion in a sponge, or in a foraminifer, I might have, from my ignorance of how they do it, been forced to hold my peace; but when the human stomach is given as the type, I am entitled to ask—where is the apparatus for digestion? Something more than gastric juice is needed for that purpose—where are the complicated apparatus of epithelial cells, the follicles, the villous coat, and all the means of assimilation? It is perfectly plain that Dr. Hooker only uses the comparison with the human stomach as analogous and not identical; and even here he will scarcely deny that, put it any way he likes, the analogy is of the feeblest. Again, assuming that there is such an apparatus, although we cannot discover any trace of it, or anything different in the minute analogy of *Dionaea* and *Pinguicula* from that of any other plant, I think it is fair to assume that it will be a complicated apparatus—seeing that the supposed commencement of the operation is on the pattern of the human stomach, and the histological arrangement of the human stomach is extremely complicated. Would it not be an anomaly in the economy of Nature if a complicated apparatus should be provided to do something which is of no advantage to the plant, and which it seems to be able to do quite well without? Of course there are no flies for the *Pinguicula* to feed on in winter, and yet it grows as well then as in summer. For three weeks of the time I observed, we had a great deal of rain, and the leaves were washed free from all remains of flies—yet the plants seemed to thrive better and better."

ASPECTS OF VEGETATION.

(LANDES OF GASCONY—FIXING BLOWING SANDS.)

WHEN we think of the aspect of the Landes of the south France, our mind sways between two images, one, the aspect of the Landes a hundred years ago, when they were a mere barren waste of shifting sand, that was daily invading the cultivated land in the interior, and the other, their present wooded appearance, as shown in the accompanying woodcut.

It was M. Bremontier, an able officer of the French administration of forests, who, in 1789, devised the means by which these barren shifting sands have been fixed and converted into their present form of profitable forest. Their previous condition, as described by him, and quoted by Loudon, consisted of drifting sands, which covered 300 square miles. The surface of this immense tract was like a sea, which, when agitated to fury by a tempest, had been suddenly fixed and changed to sand. It offered nothing to the eye but a monotonous repetition of white wavy mountains, perfectly destitute of vegetation; a multitude of round tops, some of them scooped out so as to resemble craters or semi-circular mounds. In

wish to bury me? I feel myself already oppressed with the weight of this sifted sand, which thou throwest at me playfully; yet, at the same time, it seems as if it would re-awaken me to life, whether it comes from the warm sea, still impregnated with marine odours, or whether it descends from the dune, all balmy with the pollen of flowers." And she thus graphically describes the Landes from another point of view:—"The moving rampart of sand, 40 leagues in length, notwithstanding its mobility, seems inexorable. Not the smallest harbour exists. The great waves coming from America beat against the outline of the desolate shores. If they accumulate sand and *débris*, they do not mould them in opposition to, or in accordance with, the dunes, like the ocean and the Gironde. The rivers which flow from the interior have gradually been constrained to yield to the dykes thrown across their channels. They flow parallel to the sea, in a southerly direction, so as to pour into it obliquely their dwindling waters." This is the scene shown in our woodcut. The river is fenced from the sea by a long bank of sand, now bearing the trees planted by Bremontier. It is an old story how he did so. The difficulty of fixing shifting sands is no



Present aspect of the Landes of Gascony.

imes of violent storms of wind, the surface of these downs was entirely changed; what were hills of sand often becoming valleys, and the contrary. It was on these occasions that the sand was carried up into the interior of the country, covering cultivated fields, villages, and even entire forests. This used to take place so gradually (by the sand sweeping along the surface and thus raising it, or falling from the air in a shower of particles, so fine as to be scarcely perceptible), that nothing was destroyed. The sand gradually rose among the crops, as if they were inundated with water, and the herbage and tops of the trees appeared quite green and healthy, even to the moment of their being overwhelmed with the sand, which was so very fine, as to resemble that used for hour-glasses. Madame Michelet in her recent work, "Nature; or, the Poetry of the Earth and Sea," incidentally shows that its character, in this respect, remains unchanged. She says:—"The sun was already high in the heavens. Feeling somewhat fatigued, I flung myself back upon a sand-hill; nor could there be a softer bed. The sand was so fine, so mobile, that though the wind was light, it fell about me like an impalpable dust. But soon my dress was full of it, and even my hand was covered. This set me dreaming. Wherefore, oh charming Nature, do'st thou

new problem, and various have been the means resorted to. But none have succeeded so well as Bremontier's. He sowed, on the surface of the sand, seeds of the common Broom, mixed with those of *Pinus Pinaster*, or Cluster Pine (var. *maritima*), one of the few Pines that thrive in sandy soil. He commenced on the side next the sea, or on that from which the prevailing wind blew, and sowed in narrow strips at right angles to the wind. The first strip was protected by a line of hurdles; it, in its turn, protected the second, the second the third, and so on, until the whole breadth of the downs, in the locality with which he was dealing, was covered with plantation. His success was complete—the barren waste of sand is now clothed with the fragrant Pine. Charming open sandy spots invite the traveller to pause and take shelter from the rays of the hot sun under the thick foliage of its giant boughs. A flora of its own has supplanted the previous lifeless desolation—a flora meagre, but exquisite and rich in pungent penetrating perfumes; Vervain, Mint, Bindweed, Marjolaine, and Broom are scattered around. A fauna, too, has followed in its train; crowds of insects that prey upon the Pine have swarmed after it, and their hum adds to the rural charm of the scene. Everything breathes of solitude and repose; Nature herself seems asleep, but not dead.

Before Bremontier, on such a day and such an hour, she might, indeed, have seemed dead; but, now, life is all around; man himself breaks the charm of apparent lethargy; the sound of the woodman's axe breaks upon the silence; the blue vapour of the charcoal-burners' heap ascends into the sky, and assails the nostrils. Thanks to Bremontier, man has found here, too, something for his hand to do; women and children have followed in his train, and the blowing, shifting, restless sands now yield subsistence to an industrious, though scanty, population.

A. M.

THE FRUIT GARDEN.

INDOOR GRAPE CULTURE.

THE following is intended chiefly to be an answer to Mr. Andrew Murray's inquiry (see p. 172) respecting the failure of Mr. Jennings's Grape Vines at Salt Lake City. Mr. Murray does not say whether the sorts are American or European, but I presume they are the latter, as I know of no instance in this country, in which native Grapes are grown under glass, except in cases of propagation. European Grape Vines are useless for outdoor culture in the northern and middle states, owing to their liability to mildew, and even under glass it is only an experienced cultivator who can guard against its attacks. The "slender puny" character of Mr. Jennings's Vine canes I neither attribute to cold, soil, or transplanting, but to want of water, particularly if the soil is light. Our summers differ materially from those in England: here sun and wind soon rob the soil of its moisture, and as the Vines naturally start late, the drought often begins just as they are bursting vigorously into growth; what then can be expected but partial failure? A few pottfuls of water will not do; the border, outside and in, should be forked loosely and roughly, and a thorough soaking given. Yes, barrels of water are needed. Afterwards, roughly level the surface, and mulch it over some 3 or 4 inches deep with litter. During the summer months, until the fruit begins to colour, give thorough soakings of water over the litter, say, once a fortnight, or oftener if the weather be very dry. I know an instance, near Boston, in which some Vines planted against the wall of a lean-to Vinery were rather neglected in the way of water last year; they, therefore, made scarcely any wood, but this year, on being flooded, they have produced immense rods, that promise well for next year's crop. Mildew attacks unhealthy Vines sooner than it does vigorous ones; but in any case, it is so destructive and abundant in this country, that we cannot ventilate by means of the front sashes one day, without finding mildew the next; and, even in the case of top ventilation, we must use caution, as too large an amount of fresh air from that source is equally productive of mischief. Now, this is a hard matter, as the sun sometimes shines fiercely in the morning, and unless we ventilate, and that early, the leaves get scorched. I begin to think that Mr. Wm. Thomson's plan, of compelling front ventilation to pass over the hot-water pipes, is an excellent one, and much more necessary in this country than in England. I have not, however, seen a single instance in which it has been put into operation here.

Red spider is another desperate enemy to our Grape Vines, especially where root or atmospheric drought is allowed to exist, even for a short time; and, if once this pest is permitted to get a footing, it defies all attempts to eradicate it. The clear dry air and hot sun favour its development, and it travels quickly from Vine to Vine, spinning webs and breeding with alarming rapidity, the result being rusty leaves, incapable of yielding any support. Nor does this little pest disappear with the leaves; on the contrary, it buries itself in the folds of the stem-bark, and in every crevice where shelter is afforded it. This necessitates the stripping off of all loose bark in the winter, rigidly washing the stems with soft-soap and water, and afterwards painting them over with sulphur mixtures. The house, too, should be thoroughly washed and cleaned, and all *débris* burned. We must, at least, start with clean Vines and houses, syringe twice a day, and maintain an atmosphere saturated with moisture until the Vines blossom, and from the time they set fruit till they begin to colour, the syringe must be in constant use. This, to a certain extent, is contrary to English practice; but this climate demands such attention. Greenhouse plants here are commonly grown, more or less, in Vineries, and from these mealy bug escapes to the Vines, disfiguring the appearance of the fruit. Rigid cleanliness, both of house and plants, and killing, by means of bug-brush and syringe, using a little Abyssinian mixture, are the best remedies. Some consider that European Grapes may be grown well in cool Vineries here—that is, houses without fire-heat; but I entertain a different opinion. Such late houses would furnish Grapes when our markets were glutted or well stocked with native fruit; and hence

they would not be of much value, except for the sake of variety, besides, late Vineries neither yield the amount of crop nor quality of Grapes grown in heated houses. We have a very large Vinery here, containing black and Victoria Hamburgs, Wilmot's Hamburg, Golden and Muscat Hamburgs, Muscat of Alexandria, Buckland Sweetwater, Frontignans, and others, which we force, so as to have ripe fruit towards the middle of July, and in this house we manage to have healthy Vines, excellent berries, a fair crop, and bunches weighing from one to five pounds each. In another Vinery of the same dimensions, containing some of the Vines just mentioned, together with Lady Downes, Alicante, Trebbiano, &c., but, without any means of heating, there is an equally well-set crop, just colouring; but the berries are small, and none of the bunches weigh a pound—indeed, the average might be set down as 5 oz. or 7 oz. Both houses were planted at the same time, four years since, and the Vines made good wood; except those in the late house which are deficient of both wood and leaves. In growing Grapes under glass in this country, the Vines should be started briskly, and, when once set a-growing, should be pushed on vigorously till their growth is made and their fruit is matured. Fire-heat I consider necessary in order to start growth kindly, bring out the blossoms equally, and to set the berries properly, as well as assist their swelling and ripening. The wood, too, must be well ripened, and judicious management exercised at setting and stoning times, and in lessening inside moisture, and leaving a little ventilation on all night at ripening time. In most cases here the Vineries are kept at greenhouse temperature during the winter months, on account of the plants which they contain. In other cases, however, as in that of Mr. Jennings, where there is no heating apparatus, there is danger of injury from frost. In that case the Vines should be unfastened from the roof, laid on the ground, and covered a few inches deep with dry soil, ashes, or sand. The border over the roots, especially outside, should be mulched, and when a snow storm comes all should be left undisturbed until a thaw occurs, when the snow should be shovelled off, otherwise the cold water will sink into the soil, doing much harm, inasmuch as it retards early root action. Wooden shutters, oiled canvas, tarpaulin, &c., might be used for covering borders in winter, but these are not in all places come-at-able; only the other day I saw some promising young Vines cut back considerably by last winter's frost. The Vinery in which they are growing is span-roofed, and the rods being ripened early are turned outside and buried in the border on the approach of winter, to permit the Vinery being used as a forcing house for cut flowers, but last winter they were insufficiently covered, and consequently suffered from frost. Mr. Jennings, I think, should thoroughly soak his borders at starting time and keep the roots and atmosphere damp during the summer season; he should never allow laterals to get crowded nor strip off a large quantity at any one time, but do so gradually; the Vines should be syringed, but not forcibly, with tepid water every afternoon, from the time when they begin to grow until they flower, when syringing must be discontinued; but it should be resumed when the berries are formed, and continued till the fruit begins to colour. Whitewash the outside of the glass with hot lime-wash, in which some glue has been dissolved, after the plants have begun to grow strongly, removing it when the fruit is cut. This prevents sun-scorching. Both bunches and berries should be liberally thinned, and, in the event of a heavy crop, that should be done in good time. Ventilate at the top of the house; but not at the sides till the fall, when both top and front sashes may be left open night and day. On the approach of winter, prune the Vines, but do not shorten them too much, and then bury them inside the house; or, in the event of that being impracticable, roll up the canes in dry mats or other protecting material, after having unfastened them, and thus leave them till February or March, when they should be undone and started when required. If the house is heated unfest the Vines and let them hang. Artificial heat at setting time is of immense importance. I may add that gardening in the New England States bears no resemblance to that in England. Apples thrive well, and Pears in some places, but in others Pears are subject to canker and are short-lived. Peaches used to be grown some twenty years ago in perfection in Massachusetts, but now, owing to repeated failures, they have been entirely discarded. Raspberries and Strawberries do well, but require covering with soil or leaves in winter; otherwise they would be killed. Red and White Currants are extensively grown, and are quite hardy; but it is a rare thing to find a Black Currant. I do not think Americans like them. Blackberries (Brambles), with fruits fully an inch long, bear heavy crops, but they require caution in picking, as the fruits are black some time before they are fully ripe. Native Grapes are planted largely in gardens and fields, and they may also be found in the woods. They bear heavily and in most years ripen well, but the Grapes are not appreciated much by Europeans owing to their foxy flavour. Cottagers here are very fond of their garden plots, in which

they grow Petunias, Asters, Zinnias, Phloxes, Sweet Peas, Nasturtiums, and Morning Glory; Pæonies, Pansies, variegated Balm, and Pinks. They have also some scarlet Pelargoniums, that they strike in autumn and winter indoors, and a great variety of pretty blooming shrubs, such as *Deutzia crenata* and *gracilis*, Mock Oranges, Yellow Currants, Lilacs, Fringe trees, Smoke trees, Tulip trees, which bloom splendidly here, *Weigela rosea*, *Forsythia suspensa*, *Hibiscus syriacus*, *Prunus triloba*, and a host of others. I am surprised to hear that the common Hawthorn is not hardy at Salt Lake City, as we have several pretty trees of it here that bloomed profusely last spring. Hedges of Hawthorn, however, I have never seen in this country; the Osage Orange, the Hemlock Spruce, *Arbutus*, *Thuja orientalis*, Privet, and Norway Spruce are all used as hedge plants here.

WILLIAM FALCONER.

North Easton, Mass., U.S.A.

MARKET STRAWBERRIES.

STRAWBERRIES for market are grown everywhere round London, except, perhaps, in the Fulham Fields, the soil of which is too light for them; and, unless the ground is naturally suitable for Strawberries, it is found to be more profitable to devote it to other kinds of crops. A good sandy loam, rich and moderately moist, is considered to be best for them. The kinds grown now-a-days are great improvements on those formerly cultivated. They consist of British Queen, Myatt's Eliza, Mammoth, Eleanor, Keen's Seedling (one of the oldest and still one of the best), Old Pine, Dr. Hogg, Double Bearing, Elton, Kitley's Goliath, President, Sir J. Paxton, Sir Harry, Spring Grove, and a few others, the old Groend being still grown for preserving. As soon as the fruit is picked from a quarter of Strawberries, the best of the young runners are selected for forming a new plantation, and are at once separated from the parent plant; but, as a rule, not transplanted till September, or even till October, when the spaces between the rows of old plants are dug over in order that they may be cropped with Cabbage, Lettuces, or some other crop. The runners being then ready, they are planted on ground that had been trenched and well manured for a previous crop, but which is sometimes dug again and manured before the young plants are put in. The latter are set in rows 18 inches or 2 feet apart, and they stand 18 inches asunder in the rows; but in some cases 18 inches is the distance apart in all directions. In the latter case, after the first crop has been picked, every fourth row is lifted in order to make alleys, thus affording still more room; but the space is not lost, inasmuch as it is planted with Lettuces or Coleworts. Though Strawberries do best in open quarters, for the sake of economy they are sometimes set under trees and between fruit bushes in market gardens. After they have been planted they receive, and indeed they require, but little attention beyond keeping clean and mulching them. The mulching is applied early in spring, and consists of rough stable manure. Some spread it over plants and all, so as to screen the latter from cold in February and March, but in general it is put between the rows, where it gets bleached by the rains and afterwards forms a clean bed for the ripe fruit to rest upon. Dry weather is, if possible, chosen for gathering the fruit, which is put into punnets, that are again packed in large baskets, in which they are conveyed to market. As soon after the fruit is gathered as convenient, the alleys are dug and cropped. Strawberry plantations are allowed to stand for three years, when they are destroyed and fresh ones made. In private gardens, however, they might be allowed to stand for four years, and if well cared for, they will bear as heavy a crop of fine fruit the fourth year as the third. After that they should be destroyed and the ground trenched and manured for other crops. W.

A VALUABLE FRUIT REPORT.

WE gave a brief notice a few weeks since of the published report of the proceedings of the American Pomological Society at its last session at Boston. The great value of this report entitles it to additional notice. On looking over the volume, we are struck with the vast amount of pomological information contained in its 180 pages, and this information is the more valuable on account of being the latest intelligence, fresh from practical fruit raisers, not to be obtained from any other sources. Twenty-five years have elapsed since the organisation of the society, and, with the exception of a brief interval, its labours have, from the commencement, been directed by the wisdom and energy of President Wilder, and to his guidance and efficiency it is indebted for a large share of its success. The forty pages of the society's catalogue embrace an unequalled amount of facts in geographical pomology, in a most compact form, and for this the public is mainly indebted to Mr. Barry, chairman of the general fruit committee, and his able

associates. The thanks of the whole country are also due to the members of the society who have so largely contributed their observations and experience from all parts of the wide region embraced within its field of labours, from Nova Scotia to Texas, and from the Atlantic states to California and Oregon.

Apples.

The society's catalogue, or list of fruits, becomes increasingly valuable with each biennial revision and additions. It is the result of vast labour, and gives the results of reports in fifty different states, provinces, or territories, besides brief tabular descriptions. Of Apples, 260 varieties are reported. Of this number, seventy-three have only one vote or star each, being recommended by a single report or in a single state. Many of these appear to be quite local, while others are more or less known to cultivators; twenty-two have each two votes or stars; twenty-three have three votes; ten have four votes; twenty have five; nine have six; eight have seven; five have eight; eleven have nine; six have ten; twelve have eleven; two have twelve; five have thirteen; four have fourteen; five have fifteen; nine have sixteen; two have seventeen; two have eighteen; three have nineteen; four have twenty; two have twenty-one; one has twenty-two; four have twenty-three; one has twenty-four; one has twenty-eight; one twenty-nine, and one thirty-one. The inquiry will at once be made, what is the remarkable variety which has this pre-eminent vote of thirty-one states? It is the Red Astrachan, and what is remarkable, twelve of these are double stars, indicating the highest recommendation. This vote comes from the northern, southern, and western states, indicating the adaptation of this sort to nearly all regions. Yet amateurs regard it as hardly good enough to be classed with table fruit, its other qualities—hardness, productiveness, handsome appearance, and reliability—standing strongly in its favour. Maiden's Blush and Early Harvest are nearly equal for their success in all regions, the former having twenty-eight stars, eight of them double; and the latter twenty-nine with nine double ones. Fall Pippin has twenty-four; Gravenstein, Early Strawberry, Sweet Bough, and American Summer Pearmain, each twenty-three; Summer Rose has twenty-two; Pirmate and Carolina Red June each have twenty-one; and Tallman Sweet, Fameuse, Porter, and Duchess of Oldenburgh have each twenty votes. It will be seen that only fourteen out of 260 are so fortunate as to get twenty votes or more from the fifty states or territories; and these fourteen are not always the best sorts for quality, but, their general commendation is owing to wide adaptation to different regions. The vote is not always a proof of value, such a fine sweet Apple, for instance, as Munson, does not get a solitary vote. But, usually, these stars are a fair approximate indication of merit.

The wide blank space, sparsely occupied with remarks in the report for 1871, is properly filled in this one with the tabular characters, and the few remarks are placed in small type at the bottom. These are attached to sixty varieties, leaving the remaining 200 without any. We do not quite understand the reason of the difference, nor can we quite agree with all that are given; as, for example, the only remark that is made on Tallman Sweet is, that it is "valued for stock feeding." We have known thousands of bushels raised, but never knew a single separate bushel of this sort specially employed for feeding stock. The same remark will apply partially to Golden Sweet and Jersey Sweet, to which the same remark is attached. Out of the whole 260, Ridge Pippin is the only one mentioned as "a long keeper." Bullock's Pippin is stated to be "valuable wherever known;" we have found it perfectly worthless from scab in New York. Autumnal Swaar is mentioned as "not showy;" on the contrary, it is with us a very smooth, fair, fine-looking Apple. We wish to avoid captiousness, but desire to assist a little in improving the catalogue, when we mention these few defects, and also the inappropriateness of the remark that the Onondaga is pre-eminently "the more esteemed the more known;" or the implied statement that the Madeleine is the only sort reported liable to blight, in the remarks "some say liable to blight," as if this, and no other sort, possessed this liability, and this only in the opinion of a few. The general perfection of the catalogue is, however, admirable.

It is interesting, in looking over the star marks, to observe the local high character attached to some varieties. Rhode Island Greening, for example, has double stars (the highest commendation), in most of the New England and middle states; but no stars in the west. Nearly the same is true of Roxbury Russet. The Baldwin is marked high in the New England and in some of the middle states; and in Ohio and Indiana, receiving sixteen votes, nine of them double stars. Ben Davis is nearly its counterpart at the West, receiving nineteen votes, and six of these are double stars.

Pears.

We well remember when the first pomological convention was held at New York (which subsequently became the American Pomological

Society), that a committee of nine was employed to make out a list of fruits "worthy of general cultivation;" and that but two Pears received the unanimous vote of the committee, namely the Seckel and Bartlett. It is an interesting fact, that in this report, after a lapse of twenty-five years, attended with great enterprise, activity in fruit culture, and the trial of many hundred sorts, these identical two sorts head all others in general favour. Seckel has thirty-two stars, of which thirteen are double, and Bartlett has thirty-two, with eighteen doubles. Next to these in general popularity, are Lawrence, Angoulême, and Anjou, each starred in twenty-nine states, about half of which are double. Doyenné d'Été has twenty-nine, mostly single. Among those ranging from twenty to twenty-eight inclusive, are Diel, Giffard, Superfin, Bloodgood, Buffum, Dearborn's Seedling, Boussock, Flemish Beauty, Howell, Louise Bonne of Jersey, Onondaga, Rostiezer, Sheldon, Tyson, and Winter Nelis. The fact that such an excellent Pear as Doyenné du Comice has but three votes, and one of such moderate quality as Doyenné d'Été has twenty-nine, will serve to show that it is not merely the quality, but the general and thoroughly proved adaptedness of a sort that gives it a prominent position in the list.

Of the thirty-eight sorts of Cherries, Early Richmond, as a matter of course, receives the most extensive vote, being named in twenty-six states or territories, and double-starred in five of these, and ranging throughout the east and west, but not in the southern States, where Cherries generally fail. May Duke comes next, and receives twenty-two votes. Then follow Black Tartarian, with eighteen; Arch Duke and Belle de Choisy, with seventeen; Morello and Napoleon, each with sixteen; and Yellow Spanish and Black Eagle, each with fourteen votes. Of Currants, Red Dutch has twenty-two; Cherry, twenty-one; Versailles, twenty; White Dutch and White Grape, each eighteen; Victoria, fifteen; Black Naples, eleven; Red Grape and Fertile d'Angers, each eight; Fertile de Paluan, seven; Knight's Large Red, five; and Prince Albert, two. Houghton's is the most widely commended of Gooseberries. The Concord, among Grapes, takes the lead for wide popularity, receiving stars in thirty-

one States, seventeen of which are double stars. The Delaware is nearly its equal, having thirty stars, thirteen of which are double. Hartford Prolific has twenty-seven; Clinton, twenty-three; and Ives, twenty-two. Walter receives twenty-two dagger marks, indicating high promise. Crawford's Early and Crawford's Late have the widest range among Peaches. Mammoth Cluster and Philadelphia are the two most popular Raspberries, having more than double the votes of any others, except Franconia. Among Strawberries, Wilson, as a matter of course, far outstrips all competitors, having thirty-two stars, seventeen of which are double. Next to this is Triomphe de Gand and Longworth's Prolific, each with twenty-two stars.—*The Cultivator*.—[The marks are given by representatives from each state, at the great meeting of the society, and the catalogue so arranged, that any person opening the report can get at once at information of the highest value, as to the behaviour of any particular fruit, throughout the length and breadth of the enormously large and varied country. We print a small portion to show the excellent plan and the utility of the work, contracting it, however, to the limits of our pages.]

Plan of the Catalogue.—The arrangement of the names of varieties in the catalogue is alphabetical, and according to the nomenclature adopted by the society. Synonyms are given in a few instances where it seemed necessary, and these are placed under the adopted names in italics. The columns are arranged thus:—In the first, the names of varieties; in the next seven columns the description, and in the remaining columns the states or districts. The state or district columns are not placed in alphabetical order, as in the octavo editions, but are grouped in divisions somewhat similar in climate, and other characters affecting fruit-culture. Thus: 1. Northern division—between 42° and 49°. 2. Central division—between 35° and 42°. 3. Southern division—between 28° and 35°. The state or district in which fruit is recommended for cultivation is designated by a star (*); and if the variety is of great superiority and value, two stars (**); if new, or recently introduced and promising, by a dagger (†).

Apples.*

NAMES.	DESCRIPTION.							I.—NORTH. DIVISION.†												II.—CENTRAL DIVISION.‡					III.—S. DIV.§															
	SIZE.	FORM.	COLOR.	QUALITY.	USE.	SEASON.	ORIGIN.	Maine.	New Hampshire.	Vermont.	Massachusetts.	Rhode Island.	Connecticut.	New York.	Ontario.	Michigan.	Wisconsin.	Pennsylvania.	New Jersey.	Delaware.	Maryland & D. C.	Virginia.	Ohio.	Indiana.	Kentucky.	Tennessee.	Illinois.	Iowa.	Missouri.	Nebraska.	Kansas.	California.	South Carolina.	Georgia.	Alabama.	Mississippi.	Louisiana.	Texas.		
Abram ...						W.																																		
<i>Crutchfield Greening.</i>																																								
Alexander ...	l.	r. c.	r. s.	g.	K. M.	E. A.	Rus.																																	
American Summer Pearmain	m.	ob.	y. r.	b.	F.	S.	Am.																																	
Autumn Bough	m.	r. c.	g. y.	v. g.	F.	E. A.	Am.																																	
Autumnal Swaar	m.	r. ob.	g. y.	v. g.	F.	L. A.	Am.																																	
Bailey Sweet	l.	r. c.	r. s.	v. g.	F. M.	L. A.	Am.																																	
Baker	l.	r. ob.	y. r.	v. g.	K. M.	W.	Am.																																	
Baldwin	l.	r. c.	r. g.	v. g.	F. M.	W.	Am.																																	
Baltimore	m.	r. c.	r. y.	v. g.	F. M.	W.	Am.																																	
<i>Cable's Gilliflower.</i>																																								
Baltzley	l.	r. ob.	y.	g.	F. M.	A.	Am.																																	
Beauty of Kent	l.	r. c.	r. s.	g.	K. M.	L. A.	En.																																	
Belmont	l.	r. c.	y. r.	b.	F. M.	W.	Am.																																	
Bemis Sweet																																								
Ben Davis	l.	r. c.	y. r.	g.	K. M.	W.	Am.																																	
<i>New York Pippin.</i>																																								
Benoni	m.	r. ob.	y. r.	v. g.	F. M.	S.	Am.																																	
Bentley's Sweet	m.	r. ob.	g. y.	v. g.	F. M.	W.	Am.																																	
Bethlehemite	l.	r. ob.	y. r.	b.	F. M.	W.	Am.																																	
Bevan's Favorite	m.	fl. c.	y. r.	g.	F.	S.	Am.																																	
Black Apple	m.	fl.	d. r.	g.	F.	W.	Am.																																	
<i>Jersey Black.</i>																																								
Black Oxford	s.	r. ob.	r.	g.	M.	W.	Am.																																	
Blue Pearmain	l.	r. c.	r.	g.	M.	W.	Am.																																	
Bohannan	l.	r. ob.	g. y.	g.	M.	L. A.	Am.																																	
Bonum	l.	r. ob.	y. r.	v. g.	M.	L. A.	Am.																																	
Bourassa	m.	r. c.	y. r.	g.	M.	L. A.	Ger.																																	
Bowling's Sweet	m.	r.	y. r.	g.	M.	L. A.	Am.																																	
Broadwell	m.	r. c.	g. y.	v. g.	F. M.	L. A.	Am.																																	
Brooke's Pippin	l.	r. ob.	g. y.	v. g.	F. M.	W.	Am.																																	
Bruce's Summer	l.					S.	Am.																																	
Buckingham	l.	r. ob.	y. r.	v. g.	F. M.	E. W.	Am.																																	
<i>Full Queen of Kentucky, Bachelor, Equitely.</i>																																								

* EXPLANATION OF ABBREVIATIONS.—The size is understood by l. for large; m. for medium; and s. for small. The form—r. c. for roundish conical; ob. for oblong; r. ob. for roundish oblate; fl. for flat or oblate; r. for roundish. The colour—y. r. for yellow and red; r. s. for red striped; g. y. for greenish yellow; rus. for russeted; y. rus. for yellow and russet. The quality—g. for good; v. g. for very good; b. for best. The use—F. fruit valuable for all family purposes; K. M. valuable for kitchen or market purposes; F. M. family and market. The season—S. for summer; E. A. for early autumn; L. A. for late autumn, and W. for winter. All these characters, of course, only designate leading positive features, and vary in their distinctness according to soil and climate in which they are grown. The origin is shown by Rus. for Russian; En. for English; Am. for American; Ger. for German; F. for foreign.

† Between 42° and 49°.

‡ Between 35° and 42°.

§ Between 28° and 35°.

Peach and Nectarine Stones Splitting.—Can you tell me why many of our Peaches and Nectarines have stones which cut straight in two when the fruit is cut, the fruit being sound and of good flavour, growing in a house on a wall?—A. [Your correspondent's description of his Peach and Nectarine stones, which "cut straight in two when the fruit is cut," is not very clear, but I presume he refers to the stone splitting, which occurs occasionally in some Peaches, but most frequently in such varieties as the Noblesse Peach and the Victoria Nectarine, both strong-growing kinds, which favours the impression I have long entertained, that the disease is akin to gumming, and likely to yield to the same treatment. In affected Peaches the suture is generally deep; sometimes it is open, and the split stone visible, and gum is not unfrequently exuded from the wound. We have two vigorous trees here of the above varieties, growing in a strong loam, which have a few split fruit on them every year, but the disease never affects the crop to a serious extent. Your correspondent does not say what kinds are worst with him, nor to what extent the crop is affected. It would be instructive to learn this, and particulars about soil, &c. Meanwhile, we can only advise him to avoid manuring too highly; above all, to secure well-ripened wood for another year, and when thinning the crop after the fruit is stoned, to retain only the best developed and soundest looking fruit.]

—J. S. W.]

On Grafting during Winter.

—To graft in December and January, when the sap is inert and in an absolute state of repose, appears at first sight to be paradoxical. In December, however, M. Flory grafted five wild stocks in clefts, and, after the operation, they certainly presented anything but a promising appearance. In the January following there happened to be some very severe frost; nevertheless, in March, the buds of these five grafts commenced to swell and became developed; while those of other grafts, which had been put on in the usual season, had scarcely shown any signs of vitality. The December grafts were completely successful, not one failure occurring out of the five. The following year a similar operation was performed at the same season, upon nearly 100 subjects, and this experiment was also attended with complete success. Indeed, cleft-grafting during winter is said to have been long practised in France, with the best possible results, for more than twenty years. In answer to the objection, that in the north, grafting during winter would not be successful, it is affirmed that it has been done out of doors in 7° and 8° of frost; and that in December M. Flory, after an extremely severe frost, grafted twenty-five black Cherries, and did not plant them until after the operation; and that, with the exception of one only, the experiment was perfectly successful. Should this practice be found worthy of general adoption, it will render cultivators some service, inasmuch as it will enable them to perform their grafting operations during the dead season, when time hangs heavily on their hands, leaving them at liberty to employ in some other manner the time usually devoted to grafting in the ordinary season.—*L'Illustration Horticole.*

A Good Late Plum.—We have received from Mr. Dives, Wierton House, Maidstone, examples of an excellent late Plum, suitable either for kitchen use or for dessert. It is a chance seedling in the way of the Royal Dauphin, which is thought to be one of its parents, and will be found valuable, inasmuch as it is just in season when other sorts are getting over.

The Best Apples.—Being about to plant a small orchard, I shall take it as a great favour if you will kindly give me the names of the best Apples. A very small selection will suffice.—H. L. [*Winter Kitchen Apples:* Wellington, Winter Hawthornden, Alfriston, Brabant Bellefleur, Golden Noble, Northern Greening, Royal Russet, Gloria Mundi, Minchull Crab, and Blenheim Orange. *Dessert Winter Apples:* Cox's Orange Pippin, Braddick's Nonpareil, Court-Pendu Plat, Cockle Pippin, Adams' Pearmain, Ribston Pippin, Sturmer Pippin and Lamb Abbey Pearmain. *Early Apples for Dessert or Kitchen:* Early Harvest, Keswick Codlin, Sugar-loaf Pippin, Wormsley Pippin, Cox's Pomona, Gravenstein, Emperor Alexander, Blenheim Orange, Lord Suffield, an improved Keswick Codlin.]

THE INDOOR GARDEN.

RICHARDS' CUT-LEAVED BEGONIA.

(BEGONIA RICHARDSIANA.)

This pretty little species is a native of Natal, and was introduced to our gardens in 1871. In general habit and mode of flowering it bears considerable resemblance to the well-known *B. Dregei*, from which, however, it differs, in having lacinated foliage. It forms an elegant decorative plant and grows freely in a moderately cool greenhouse, forming bushy little specimens covered with multitudes of snow-white crystalline flowers. Like all the tuberous-rooted species of the genus, it is readily propagated by division, and if grown near the light, these divisions soon form flowering plants. A compost of turfy loam, leaf mould, and coarse sand suits it admirably, and, like most other members of the genus, it requires an abundant supply of root-moisture when growing. Plants of this desirable little species have already found their way into Covent Garden Market, and it well deserves cultivation as one of the prettiest plants in the whole group. It was obtained from South Africa by Mr. James Richards, in complement to whom it is named. B.



Richards's Cut-leaved Begonia (*B. Richardsiana*).

POINSETTIA PULCHERRIMA.

How differently do we find this plant treated by different cultivators; under some it has a bare stem of old wood from 1 to 2 feet long, a height to which it is cut back year after year, and the young wood that is annually made, is by no means vigorous or healthy; some, again, allow their Poinsettias to remain in the stove all summer, thinking they are right in so doing; but, like many other plants, Poinsettias succeed best when they are not kept in stove-heat in the summer time. I prefer dwarf plants that have been allowed to rest a short time before being re-potted or cut back. They should not be pruned and re-potted at the same time, as that would prove too great a check to them. A better way is to cut them back two or three weeks before they are re-potted, as is done in the case of Pelargoniums; when they push afresh they may be re-potted, and, if what they are growing in, was nearly all fresh good soil last season, perhaps, it may not need much disturbance. Some-

times Poinsettias make quantities of coarse roots, and, when that happens, it is generally best to remove most of them, preserving such as are small and fibrous. Plenty of drainage is necessary for all plants, but especially so, for such as are expected to do good service during winter. As to soil, about one-half loam, and one-half turfy peat, with plenty of sand to keep all open and porous, will answer perfectly. After the plants have been cut back three weeks or so, and have been re-potted with care, they may be placed in a little bottom-heat in order to start their roots into growth, and likewise to assist the buds to push more freely; a fortnight or so will be quite long enough to keep them upon bottom-heat. By turning one or more plants out of their pots, it will be seen whether or not the roots have reached the sides of the pot, and if so, keep them cooler or remove them to a cold pit, where they can be kept shut up closely for a time, and when they seem inclined to grow, give them more air, and, perhaps, they may require shading during bright sunny days for four or five hours; but, be sure to keep them well supplied with water, and the bottom of the pit should always be damp, at least, while they are in a growing state. They will often push from three to five new branches from 18 inches to 2 feet 6 inches in length, and become well furnished with large and healthy leaves, which form a nice ground-work on which to show off

their brilliant bracts during winter. After a few years' attention in this way, they will, of course, increase sufficiently to require a good-sized pot, i.e., if good foliage and handsome plants are desired. Poinsettias will succeed without artificial heat until well advanced into October, when they should be removed to their winter quarters.

Barnet.

G. DAWSON.

LESCHENAULTIA FORMOSA.

SOME twenty years ago this occupied a prominent place on our exhibition tables; but now, somehow or other, such a distinction is seldom conferred on it. It is too good a plant to be lost sight of, more especially as its culture is so simple, that it may be successfully grown in any greenhouse where plenty of light is admitted. The kind of soil most suitable for it is two-thirds of rough turfy peat, and one-third of silver-sand, adding to this one-sixth of the whole of light, mellow, fibry loam. Let these be well mixed together, and used in a perfectly coarse lumpy state. Procure young healthy plants in March, and, supposing them to be in 48-sized pots, in which they have been wintered, they may be at once shifted into 24's, taking special care, however, that the pots are perfectly drained with broken potsherds to the depth of about an inch, having a little chopped Moss sprinkled over the drainage, to prevent the soil from mixing with the latter, and thereby obstructing the free circulation of water—a most important point in the cultivation of this plant. After the operation of potting is performed, let the whole be well watered through the rose of the watering-pot, and then placed in a light part of the greenhouse near the glass. With attention and good management it will have made, by the middle of July, sufficient progress to require another shift. It may then be moved into a larger pot, following precisely the same mode as in the spring shifting. It will then remain in this pot until the following March, when it will be ready for a final shift, say into a No. 12, in which, during the following summer, it will become an object of surprising beauty—an ample recompense for the care and attention bestowed upon it. The training of the plant, during its growth, should not be forgotten. One stake alone will be sufficient for this plant; this will take the centre or leading shoot, and the lateral branches may be, as occasion requires, supported by ligatures of green worsted. The form, in this case, will be a perfect cone, the under branches hanging down over the sides of the pot; surely such a form and arrangement are decidedly superior to torturing and twisting the branches in every direction, as is often done when wire and stakes are used. No plant with which I am acquainted is so apt to suffer from continued profuse blooming than this. Therefore, in order to strengthen its growth and add fresh vigour to its constitution, the flowers should be occasionally entirely and carefully picked off. It has been recommended in the culture of this species to place it in heat, but on no account do this; Leschenaultias are thorough greenhouse plants, and must be treated as such. Plants of that kind, when exposed to high temperatures, in an atmosphere charged with vapour, acquire an artificial constitution, and assume a weakly attenuated appearance, quite unnatural to a plant of temperate habits. This is the common cause of inexplicable premature dissolution. Leschenaultia requires, and should have, a quiet, cool temperature, with plenty of light, and a regular yet judicious supply of water. Plants treated in this manner will never suffer to the same extent by the heats of summer or the damps of winter, as those produced in warm houses. In the autumn it may be placed in the open air, in a partially shady situation, which will harden its wood, and the better enable it to withstand the long confinement to which it must be subjected during winter.

R. G.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Trailing Plants on Orchard-house Walls: H. The best are *Lapageria rosea*, Tea Roses, *Berberidopsis corallina*, *Camellias*, *Plumbago capensis*, *Fuchsias* (planted out of course), *Heliotropes*, *Bignonia Cherere* (if the house be a large one), and *B. jasminoides*.

Grafting Epiphyllums: E. B. Head down your *Pereskia* stocks to the height required—12 or 10 inches, and, making a slit in the top, insert your graft, an ordinary shoot (it may be 2 or 3 inches in length), and bind together with a small piece of matting. Place the plants so worked in a close, warm frame, and in the course of ten or twelve days they will have united.

Bougainvillea Culture: E. B. The chief point is the ripening of the young wood, and this is generally effected by growing the plants in a warm sunny house, and by not having their roots in a too moist medium. Close pruning, which is conducive to the development of strong sappy growth, is to be avoided; and the branches should have scope to grow.

Opthiopogon Jaburan aureo-variegatum.—A handsome variegated plant, with broad Grass-like leaves, either wholly golden-yellow, or broadly margined with that colour. The plant is very pretty in the normal state of green foliage, with its numerous spikes of violet or purple-blue flowers, resembling the well-known Grape Hyacinth in shape; but the contrast between the flowers and yellow foliage is very effective. It is an excellent pot-plant, and suitable for room decoration when cultivated in pots in the greenhouse, whether in flower or not, the handsome form of the arching grassy foliage being very pleasing. *Opthiopogon spicatum argenteum* is a smaller-growing sort than the last; but also very pretty, particularly as a pot-plant.—*G. Ordner*.

THE GARDENS OF ENGLAND.

BRANTINGHAM THORPE.

By J. C. NIVEN, Botanic Gardens, Hull.

ON a spur of the chalk hills, that may be said to originate at Flamborough Head and terminate in the Dover cliffs, is situated the charming residence of Christopher Sykes, Esq., M.P. for the East Riding of Yorkshire. What it lacks in palatial dignity is amply compensated by the lovely surroundings, which combine a fair share of Nature and Art, with a predominance of the former above the latter. The entrance to the park is about a mile from Brough station on the North-Eastern line, flanked by a lodge, recently erected in the Elizabethan style; it is neat, but by no means pretentious, and admirably in keeping with the hall itself. The drive is through a nicely undulated piece of park scenery, with a considerable slope from north-east to south-west; as it gradually rises, the charming view of the river and of the Lincolnshire coast expands, till, when you reach the terrace on which the house stands, you command a lovely panoramic view of the glorious estuary of the sea, known as the river Humber, but, seeing that it is here fully three miles wide, and viewed from the terrace lengthwise for a distance of at least twelve miles, through which it retains the same width, at that point branching into the Trent and the Ouse right and left, it realises, with the foreground beautifully broken by the groups of trees in the park, the idea of a lake of almost unlimited extent. There is, indeed, no site of such commanding beauty, so far I have seen, in the East Riding. The hall stands at an elevation of some 200 feet or more above the level of the river, and the hills rise above it to a similar height, clothed with massive plantations, broken every here and there with ordinary fields, which, in some cases, lose themselves over the crown of the hills, thus giving distance and variety to the landscape. The hall, as I said before, is unpretentious, and has recently undergone considerable alterations; but, so perfectly in keeping is the new work with the old, that it is almost impossible to tell one from the other. It is Elizabethan in style, built of rubble stone-work, and pretty well suffused with Ivy, Banksian and other Roses, Wistaria, and, though last not least, *Ampelopsis Veitchii*, lovely in its growth, and still more lovely in the intense crimson colour which it assumes in the autumn, and carries for double the time that the old Virginian Creeper does; without this garniture the house would have a bald appearance, but with it, a beauty of detail far greater than could be attained by the stonemason's and sculptor's art is found at the hand of Nature, and the decorations may thus be said to be drawn from the primitive, but at the same time, purest source. Fronting the hall is a terrace, about 50 feet wide, chiefly of gravel and Grass. This is bounded by a low parapet-wall, and enlivened by a few vases, giving just a sufficiency of colour to light up the fore-ground. This wall is to be substituted by a balustrading, and to be extended to a greater distance from the house, which will be a great improvement; in fact, considerable alterations are contemplated, by which the pleasure grounds will be extended, so as to take in two Wellingtonias planted on a knoll at the south-east end of a house. These trees are interesting, as *souvenirs* of a Royal visit, having been planted by their Royal Highnesses the Prince and Princess of Wales. They are now about 12 feet high, and show every prospect of making noble ornamental trees. The ground rises rapidly towards the back of the hall, by a terrace slope of some 10 feet in height, reached by a flight of steps, and on this higher level is the flower garden. Its position at the back of the house, on or above the level of the top of the lower rooms, is undoubtedly somewhat anomalous; but, seeing that the view of the house is well shut out by means of Yews and large evergreens, and that formality is almost entirely absent in the arrangement of the flower beds, and that the surface of the ground is disposed somewhat as Nature left it, or, at least, looks so, which is the highest compliment I can pay to the artist who formed it, the surprise, on reaching the top of the high flight of steps from the lower terrace, is as great as it is unexpected. The flower garden here is by no means extensive. There are no long lines of floral ribbands, one of the most expensive and wasteful forms of flower gardening there is. The impression they convey is instant-

neous; but, as you progress onward, no new beauty or form strikes the eye. Here the flower beds are distributed on the uneven, but gracefully-rounded, surface, tolerably wide apart; and the shape of each bed, or each group of beds, is adapted to the surface. In arranging the planting, each flower bed or group of beds, is complete in itself, and each one possesses its own individuality of character—a grand point, which, with taste and discrimination, may be carried out without any interference with the several beds—in other words, without interfering with the unity of the whole, as seen from a distance. This is a grand point in flower gardening, not only to satisfy the eye, but to supply an unlimited amount of interest in regard to the various materials that are called into play to work out the details. It would be difficult to particularise the component parts of such a flower garden; nevertheless, having stated what I have, I am bound to give one or two illustrations. Nothing could be more lovely than a Maltese cross, consisting of an edging, about 8 inches wide, coming up to the very margin of the Grass, of the silvery *Antennaria sericea*, often called *tomentosa*, the centre part being filled with a mass of *Lobelia Blue King*—a variety of compact uniform growth, not tufty, and possessing a soft light blue colour. The silver-grey and the delicate azure combined are charming, and would form a fitting setting for such a glorious ruby-flowered *Pelargonium* as the new one known by the name of *Heart's-ease*, which I saw in one of the plant-houses at Brantingham for the first time. Another narrow bed was margined with *Sempervivum calcareum*, generally stiff and formal, but, in this case, beautifully contrasted with a nice belt of *Leucophyta Brownei*. This I was delighted to see, as it fully bore out a prognostication I made in your columns some two years ago—that it promised to be a very model of a bedding plant; and here it is, its tiny branches clothed with the purest frosted silver coating, rising perpendicularly from the surface, devoid of all stiffness and formality. In the centre of the narrow bed rose some of the newest of the Silver-leaved *Geraniums*, here a lovely rose, there an intense scarlet, interspersed with various *Lantanas*, which latter, by the way, will prove, in dry seasons and dry situations, valuable and lovely bedding plants. The chief beauty of this bed hinged on the peculiar growth of the *Leucophyta*. A circle of considerable size planted with Silver-leaved *Geraniums*, consisting of *Princess Alexandra*, *Bright Star*, and *Snowdrop*, interspersed with the *Blue Violet*, magnificent, whose flowers just rose sufficiently high to intermingle with the silvery foliage, was exceedingly effective; it was margined with *Golden Chain*, minus its flowers, and centred with a group of the graceful *Humea elegans*. On a tolerably steep sloping bank, rising to the foot of an irregularly outlined shrubbery, are two carpet beds, shaped in the form of an elongated letter S. These were so lovely and distinctive, that, at the risk of being tedious, I must endeavour to give your readers a brief description. Externally they are margined with a double row of *Sempervivums* in one case, and *Echeverias* in the other, placed closely together. Five figures are picked out in the same manner, along the centre line of each bed, by means of *Sempervivums*; each figure having a distinct species as its frame work, and in each a good bold plant, of the larger growing succulent plants, finds a fitting home, expanding their massive leaves over a carpet of some of the smaller growing *Houseleeks* and *Sedums*, interspersed with seedling *Portulacas*, whose gorgeous blooms, on a bright sunny day, add such a charm as they only can give. External to these patterns is a mass of *Alternantheras*, consisting of *paronychioides*, with its major variety and *amabilis*, as dense and dwarf and fresh in colour as can be, although a cold night or two a few days before my visit had completely destroyed the beauty of the *Coleus*. A series of little circles, again margined with *Sempervivums*, contained in the centre a plant of the thick-leaved *Pachyphytum*, the whole completed by a golden carpet of the now popular *Stellaria graminea aurea* neatly defined by the formal margin along the outside of the bed, and loosing itself with charming irregularity beneath the parti-coloured foliage of the *Alternanthera*. This plant is a most invaluable substitute for the *Pyrethrum*, requiring, as it does, no training, and gaining much in its irregular elegance of outline as compared with the formality of the *Golden Feverfew*. One item I forgot to mention was, that above the golden carpet was

dotted at regular distances the *Double Lobelia*; as yet, it has not been very effective, owing to the plants being very small when planted out, but another week of autumn sunshine will see each tuft one mass of lovely blue, and then these carpet beds will be little, if at all, short of perfection. The reader will note that situated as they are on a sloping bank, they can be seen at a distance, without the necessity of standing over them, and further, that such conditions are admirably adapted for the growth of such plants as they contain.

Amongst the newer *Geraniums*, I especially noted three bronzes, viz., *Marshal MacMahon*, *Emperor of Brazil*, and *Black Douglas*; not only were they distinct and well defined in their markings, but also of vigorous constitution. Amongst yellow leaved, *Robert Fish* and *Yellow Boy* are two excellent sorts, the former being the dwarfest and freest bloomer. Among the silvers, *Turner's Bright Star*, *Sibyl*, *Princess Alexandra*, and *Silver Gem* have all stood the test up to the present time, and are considered by Mr. Kingston as best adapted for the locality, as also are *Flambeau* and *Lady Cullum*, from the host of tricolors. One word of commendation I must give to *Brilliantissimum*, admirably dwarf, intensely scarlet, and producing its flowers in greater abundance than any other scarlet; it is not half as frequently seen as it ought to be. The most important knoll in the flower garden is crowned by a sort of quatrefoil-shaped conservatory, consisting of high pilastered, upright sides, and a curvilinear iron roof, whose narrow spaces between the sash-bars, at once indicate that it is no modern structure, but, very possibly, one of the oldest iron conservatories in the East Riding. In the central portion is a fine collection of noble *Azaleas* and *Caméllias*, the eastern wing being devoted to hard-wooded greenhouse plants, and the western to *Heaths*; on the north side of the stages, shaded, of course, from the direct sun, but exposed to a full current of air, are cultivated fine plants of *Nothochlœnas*, *Cheilanthes*, and other *Ferns*, in fine vigorous health, and of sturdy aspect, contrasting wonderfully with the sickly appearance they present when growing in a hot moist atmosphere. The very native habitats of this charming section point at once to dryness as an essential element in their successful culture, and Mr. Kingston's mode of treatment clearly shows that coolness has an equal value as a concomitant. I may add, that many of these plants have been grown for years under the same conditions. On the high ground, north of the conservatory, are some nice specimens of *Coniferæ*; amongst others, *Taxodium sempervirens*, fully 32 feet high, its lower branches sweeping the trim turf with a beautiful irregularity of outline, to an extent of 30 feet in diameter. The circumference of its stem at 3 feet from the ground is 5 feet 6 inches; here I may add that this tree, so liable to turn brown and wither in foliage during winter, remains true to its specific title, and is always green. No doubt the happy adaptation of the *Taxodium* to this locality induced the selection of two of its giant brethren, the *Wellingtonias*, as the commemorative trees, before alluded to. I noticed also a remarkably fine specimen of *Cryptomeria*, about 25 feet high and 20 feet in the diameter of its branches, densely feathered to the ground.

Divided from the flower garden by a fine bank of regularly trained common *Laurel* and reached by means of a steep serpentine walk, is the kitchen garden, about $1\frac{1}{2}$ acre in extent. As usual, the north wall is devoted to a range of *Peach-houses* and *Vineries*, with a peculiarity in their structure one does not often meet with, in the fact that the whole range slopes fully 4 feet from east to west, thus adapting itself to the general slope of the ground; nor, I am bound to say, is the effect at all displeasing, as some of my readers might imagine. The *Peach* culture is admirable, but the *Vines*, as a rule, lack that vigour of constitution that one might expect them to attain, with a fine dry chalky sub-soil. I would note in passing, that I met with a *Vine* in cultivation that I never came across elsewhere, called the *Prince de Herault*; its berries have a powerfully aromatic *Strawberry* flavour that is highly esteemed on the dessert-table. They, as well as the bunches are both small, and the latter somewhat ragged; but its peculiar aroma alone renders one plant of it, at least, well worth cultivation. Outside, and eastward of the kitchen garden, is a span-roofed *Orchid-house*, almost buried in the ground, where *Orchids* and *Pitcher* plants, as well as a choice selection of

Ferns and Lycopods, indicate, in their perfect vigour, the admirable adaptability of such a house as compared with a lofty one; the walls, on all sides, are continuously giving off both moisture and heat, two essentials that ought, by every possibility, to be retained within such a building. Close by there is a series of handy pits, half-span, well heated and ventilated, in which the growth of various winter-flowering plants is admirably carried on; this is a part of the establishment that is brought largely into requisition, table decorations, hand-bouquets, and button-holes of the most *recherchi* description being sent up to London daily during the season. I omitted to mention that in the Orchid-house the *Ouvirandra* or Lattice-leaved Plant, was growing vigorously, producing hundreds of finely-developed leaves. I ought also to specialise two creepers, viz., old *Jasminum sambac* and *J. dianthifolium*, two of the most fragrant plants grown; and that the roof was studded with scores of the large golden blossoms of the *Allamanda Hendersoni*.

Although my remarks have already extended to too great a length, I must not omit to state that a fine south border outside the kitchen garden, in a position nicely sheltered from the wind, is devoted to the culture of a choice collection, or rather selection, of herbaceous plants. Miss Sykes takes almost as deep an interest in these plants as does Miss Hope, of Wardie Lodge; she thoroughly appreciates the continuous variety that such a border offers. The excessively dry summer we have passed through, added to the natural dryness of the locality, has left some vacancies; these, however, will soon be filled up. I will only supplement the foregoing description of Brantingham Thorpe, by stating that the neatness, order, and system which is evident through the entire management of the place, reflect the greatest credit on Mr. Kingston, who has for years ably filled the office of gardener, and now holds along therewith that of steward of the whole estate.

Parks and Open Spaces.—The following is the acreage of the parks, commons, and other open spaces, under the charge of the Metropolitan Board of Works:—

	ACRES		ACRES
Finsbury Park . . .	115	South Mill Field . . .	28
Southwark Park . . .	63	Clapton Common . . .	9½
Blackheath . . .	267	Stoke Newington Common .	5½
Hampstead Heath . . .	240	Waste Lands at Dalston	
Shepherd's Bush Common .	8	Lane, and Grove Street,	
London Fields . . .	27	Hackney . . .	1
Hackney Downs . . .	50	Tooting Beck Common . .	144
Well Street Common . . .	30		
North Mill Field . . .	29		1,016½

Promotion of Germination by Camphor-Water.—A series of experiments, undertaken by Professor Vogel, of Munich, to substantiate the fact that camphor-water promotes the growth and prevents the wilting of Tulips, &c., led to the discovery that old seeds, which have almost lost the power of germination, not only recover it when treated with camphor-water, but even germinate in larger numbers and more rapidly than fresh seeds under ordinary conditions. Thus Beans, that required eight or ten days for germination under ordinary conditions, develop in camphor-water after three days; and Cucumber seed that would not germinate at all in good soil, germinated soon, and without a single failure, in camphor-water; and what is more remarkable still, the seeds so germinated manifest a continued effect of the camphor, when transferred to good garden-soil, in the vigour of growth and freshness of the plants. This fact, it is suggested, might be of service, especially in cases of expensive seeds, that germinate with difficulty.

The Storage of Rain-water.—Some calculations published in the *Sanitary Record* show that owing to deficient means of storing water, we, in this country, make use of only a seventy-fourth part of the actual rainfall. The area of England and Wales, being taken as comprising 37,000,000 of acres, and reckoning that about 32 inches of rainfall during each year upon an average, and each inch of rain falling upon an acre of ground supplies 22,622 gallons, it will be seen that this portion of the United Kingdom is yearly supplied with over 27,000,000 gallons of water, in the shape of rain, not including dew-fall, which is often very abundant. It is calculated that an ordinary cottage roof covering 2½ poles, can collect some 7,000 gallons, taking the rainfall at 20 inches only, while a large farmhouse and out-buildings, covering 10 poles, will collect over 28,000 gallons yearly, all which supply might be received in tanks, which could be constructed at a trifling expense to each village, if the inhabitants combined to defray it.

THE FLOWER GARDEN.

NOTES ON THE NEW LOBELIAS OF 1874.

HAVING promised you some account at the termination of the summer bedding season of the respective merits of the ten varieties of new *Lobelia*, I have had under my notice in my trial border during the summer, I shall now proceed to consider them seriatim. The four varieties sent to me by Messrs. Henderson, of Wellington Nurseries, St. John's Wood, were named—(1.) White Brilliant, but scarcely, I think, deserving this name, as it is apt to show blue streaks at times, and, though of a compact upright growing habit, produces but medium-sized individual pips, and is not to be compared for purity of white or size of flower with Dixon's *Nivea*, which still holds its place (in my opinion, at least) as by far the best and most distinct white in cultivation. (2.) *Speciosa bicolor*; this is by far the prettiest of Messrs. Henderson's set, as far as size of individual bloom and distinct marking and division of the two colours are concerned, but its habit of growth is, unfortunately, weak and slow, at all events in a dry summer, which made it fail to cover the circle of ground allotted to it, and so produce but little good effect; it may be more satisfactory in a moister season, and, as the individual flowers are so good, I shall try it next year. (3.) *Pumila maxima azurea*; this variety has little, if anything, to recommend it for cultivation except its compact habit, as its blossoms are not produced very profusely, and are, individually, inconspicuous either for colour or size, being but little larger than those of the old *pumila grandiflora*, and by no means of a bright blue. (4.) *Porcelain Brilliant*; neither has this variety much to recommend it beyond its habit, which is upright and tufty, but the shade of colour is not bright, and the individual flowers are small. Of the three varieties sent out by Messrs. Carter, of Holborn, under the names of Faith, Hope, and Charity, the second alone is valuable, being of good, low-growing, compact habit of growth, and producing good large flowers of a clearly marked pure white and bright blue very conspicuous and a most marked improvement on the old variety. The other two are utterly and absolutely worthless; the one being a dull, pale, reddish-brown, with very small flowers, and the other sporting all sorts of flowers, no two of the six plants under notice producing blooms alike. Of the three varieties sent me by Messrs. Dixon, of the Amhurst Nurseries, Hackney, Painted Lady is by far the best and most valuable, as, though rather of a straggling habit of growth, it continues to produce its very prettily striped blooms up to the very end of the season, and long after the beauty of all the other varieties in the border has come to an end, being now, as I write (Sept. 14), still covered with fresh and beautiful blooms, and seeming likely to continue to produce them till cut off by frost. *Purpurea* is a variety of little individual merit, though good for massing, being a strong compact-grower with a deep (though dull) shade of blue. *Carulea* has considerably disappointed me, as, owing perhaps to the very dry season, it made very little growth, and produced so few flowers as to be in nowise effective, though, from its shade of colour, being by far the lightest of any I have yet seen, it may be useful in a moister season. Henderson's beautiful variety of '73 *Mazarine Gem*, was much admired here this season, as it is quite unequalled in depth and brilliancy of colour, and, owing perhaps to the dry season, did not straggle and spread about by any means so much as the first year I had it; planted inside a row of the *Stellaria graminea aurea*, or Golden Chickweed, it proved a most beautiful and effective contrast along the whole of the front of the trial border, and in a double row in a scroll bed with a row of that finest of bronze-bicolor *Geraniums*, Marshal MacMahon, up the centre, it was exceedingly admired. The double *Lobelia*, though it may be forced into flowering by keeping it starved in pots and plunging these in the border, can, after all, be considered but of little or no value for bedding purposes, as it lasts but a very short time in flower, and if not allowed to grow into a large green tuft of foliage, seems to resent the confinement of its roots, and take refuge in dying. Dixon's white *Lobelia nivea*, is still far the best white in cultivation, and, if a little more compact in habit of growth, would, I think, be perfect. The same firm

has, however, another new white to be sent out shortly, and to be named, I believe, Nivosa, which is said to be even of a purer white, and to have a larger and more conspicuous pip than even Nivea.

W. E. G.

THE COTTAGE IN KENSINGTON GARDENS.

THE little flower plot in front of the cottage in Kensington Gardens is just now an object of considerable interest on account of the glimpses of rich colour afforded by the bedding plants which it contains, indeed, few other spots in the gardens are better fitted for showing off glowing colours than this little semi-circular enclosure, backed up as it is by a somewhat formal looking castellated cottage, made beautiful by the dense growth of fresh glossy-leaved Ivy, under which it is more than

fully a month, or even six weeks, after the beauty of Pelargoniums, Calceolarias, Verbenas, and most other flowering plants, is over, or, at least, greatly impaired. The use of crimson or carmine Alternantheras (which are everywhere in beautiful condition), Golden Feverfews, Mesembryanthemums, Golden Chickweed, Echeverias, and silvery Kleinias, Santolina, and Centaureas, in addition to their being more permanent, also afford much more harmonious masses of colouring than can be obtained by the use of ordinary bedding plants. In the semicircular bed just mentioned, the prevailing tints are blue, carmine, and soft golden-yellow; and, when seen in reflected sunlight, these colours forcibly bring to mind the rich flood of light sometimes seen issuing through a richly painted window; and this, viewed against a cool carpet of turf, and in a cosy nook, associated by noble trees, forms a pleasant little



The Cottage in Kensington Gardens.

half-concealed. This somewhat sombre looking back-ground contrasts well with the lighter coloured drapery afforded by the Chesnuts, Limes, Oaks, Planes, and other forest trees by which it is in part surrounded, while the fresh greenness of the turf forms a pleasing middle tint, that sets off the display of glowing colour to much advantage. Although, as will be seen on reference to our plan (see page 301), this is strictly a geometrical arrangement, yet much of the consequent formality is obviated by the judicious employment of isolated specimens and effective little tufts of Palms, Cycads, Dracænas, and other plants of elegant habit, which supply beauty of form, and stand out in pleasing relief amid the bright masses of colour. The large semi-circular or panelled bed seen on the plan also affords an excellent illustration of the value of dwarf foliage plants for ensuring late autumnal effects, as by their use we secure bright colour

picture well worth reproduction in our pages. It need only be added that, although some 10,000 plants are employed in this arrangement, the result, as a matter of special display, amply repays all trouble connected with their management, and this little garden annually attracts thousands of admiring spectators during the summer months.

F. W. B.

EARLY TULIPS FOR SPRING BEDS.

TULIPS must be grown in a rich soil to succeed well in beds. It is a mistake to plant them in poor exhausted soils or beds that have had all the heart taken out of them by Pelargoniums, or some other gross-growing plant, leaving nothing for the Tulips to feed upon. Before Tulips can be planted in such beds they should be forked or dug over, and the soil well beaten to pieces; they should then be opened to the depth of 6 or 8 inches, and given a good dressing of

thoroughly decayed manure, from an old Melon frame, and leaf-soil. On this, place about 4 inches of soil and fork all well together, removing the remainder unless required to raise the bed. As a rule, bulbs for outdoor decoration are not planted till the last week in October or early in November. Beds planted solely with Tulips are disappointing, notwithstanding their brilliancy and effectiveness for a time. The aim should be to gain prolonged effects, or, in other words, a succession of floral beauty; and to secure this something should be used in combination with Tulips. Aubrietias, such as Campbells, græca, and purpurea, with their lavender, lilac, and violet flowers, are well adapted for forming edges to large Tulip beds, and entirely carpeting small ones. Take, for instance, a bed of A. Campbells, perhaps one of the best for general spring work, and about it dot little clumps of the crimson-flowered variegated double Daisy. Let us suppose that previously to planting the bed there had been placed in it a few pure white and scarlet-flaked Tulips; all would be in bloom about the same time, and the effect would be pleasing in the extreme. Then there are the double Daisies, now a somewhat numerous section, and invaluable in small gardens. There are the white, the pink, the mottled-crimson, the deep crimson, and the pretty variegated-leaved one. Daisies, when planted in a good rich free loamy soil, form a dense carpet or undergrowth, and flower with great profusion and continuously. A wonderful spring garden might be made up of Daisies and Aubrietias alone. The earliest to flower is, unquestionably, the mottled-crimson, the others coming into bloom soon after. Cheiranthus alpinus, too, a most effective dwarf-growing yellow perennial Wallflower, must not be forgotten, nor the orange-coloured C. Marshalli, both a little late, but scarcely rivalled for decorative effect. The white Arabis albida, and the variegated-leaved one; also Myosotis dissitiflora the largest and earliest of the spring-flowering Forget-me-nots; the pretty prostrate Phlox frondosa and P. Nelsoni, the former with rose-pink, the latter with white flowers; the double white Saxifraga granulata flore pleno, Silene pendula, with rose-coloured flowers, and also its white variety—these, and others of a similar character, may be used in combination with Tulips, and with happy effect. Let it be remembered, too, that all the foregoing are hardy plants that may be readily increased by root-division, or raised from seeds sown at the end of summer. As to Tulips, the following can be recommended with confidence, viz., Belle Alliance, brilliant scarlet, dwarf and fine; Canary Bird, clear rich yellow; Purple Crown, rich dark crimson; Scarlet Van Thol, glowing scarlet; Keizer Kroone, crimson-scarlet, edged with clear yellow (a magnificent variety); Le Matelas, white, flushed with bright rose; Paul Morelse, cerise crimson, distinct and fine; Queen of Violets, pale violet, very fine; La Pluie d'Or, clear yellow; Proserpine, rich dark rose; Rosa Mundi, white shaded with rose; Royal Standard, white feathered with rosy-crimson; Thomas Moore, orange; and Van der Neer, purplish-violet. Let it be borne in mind also that when once obtained, a collection of varieties of these early Tulips may be made to last for years. All that is required is a piece of light ground, to which the Tulips can be transferred when they are lifted from the beds, keeping each variety separately, and allowing them to ripen their foliage and mature their growth. A compost consisting of sandy loam and leaf mould should be placed about the roots, which will repay a little care of this kind.

Quo.

FANCY POLYANTHUSES FOR OUTDOOR SPRING DECORATION.

No more useful plants exist than what have been termed, for convenience sake, fancy Polyanthus. They need some such separate designation to distinguish them from the gold-laced varieties of our florists. Originally of German origin, certain flowers were chosen because of their large size and brilliancy of colours, and these have now been selected and bred from so carefully as to have brought into cultivation a strain that far surpasses, for decorative effect, anything of the kind hitherto used in our winter and spring gardens. Of vigorous habit of growth, these Polyanthus throw up large trusses of flowers of great beauty. None of the delicacy of constitution which belongs to the gold-laced Polyanthus of the florist, and which results from so much inter-breeding in order to get quality, belongs to this new strain; their vigour appears to set at defiance all the exigencies of weather—severe cold and extreme wet alike do them but little apparent injury. Some of these Polyanthus having been shown in public at the meetings of the Royal Horticultural Society during the past spring, and having excited a good deal of interest, it is not surprising that a batch of them should be named for distribution; and so unmistakably fine were some of these as to receive first-class certificates. One of the most striking is termed the Bride. This has large pure white flowers, with a deep orange centre, borne in a bold massive truss on a stiff foot-stalk; and

is suitable either for beds or pot-culture. A pure white Polyanthus cannot fail to be an attraction, especially when it possesses high-class quality like that seen in the variety under notice. Pure too, as it is in colour, it has stood exposure to all weathers in the open air with but little perceptible injury. Another is named Viceroy; this has bright sulphur-coloured flowers, with a deep orange centre, very fine pip, and splendid truss; I have seen this very fine indeed, both in pots, and in the open ground. Jessie is distinguished by its bright rosy-violet hue and striking yellow centre, which is regularly and handsomely marked with orange; large pip, bold truss, very free, fine, and showy. Etna, as its name implies, is a bright and effective variety; the colour magenta-crimson, with a slight spot of white at the extremity of each segment, and a bold and striking golden centre. This variety is of a colour that stands exposure well. Field Marshal is a very fine variety, with rich velvety crimson flowers, distinctly margined with white, and a golden centre with reddish-orange rays; pip and truss alike are fine and bold. The last is Warrior: this has rich shaded magenta flowers, with a yellow centre rayed with deep orange, fine bold pip, and truss showy and striking. These new forms of Polyanthus may either be cultivated in pots or in the open ground. If grown in pots, they should be potted in a good free loamy soil, with which is mingled some decayed manure that will readily crumble to pieces in the hand, and some leaf soil. When potted, they should be put in a cold frame or cool greenhouse, but allowed a free circulation of air, or the plants will become infested with green fly, which will impair their growth. A cold frame is best, as by tilting the light air circulates freely among the plants, and green fly will not be so troublesome. Just before the plants come into flower, some of the surface soil should be removed and replaced with other material of a rich character. If planted in beds in the open ground, the soil, which should be of a loamy character, should be well stirred to the depth of a foot, and some rotten manure and decayed leaves well forked into it. All Polyanthus require depth in which to root, and what is known as a cool bottom, such as sand or clay. The roots strike down deeply, and by doing this the plants are enabled to hold their own even during continuous dry weather. In addition the plants also form fresh roots just beneath the leaves; hence, the necessity for top-dressing, which should consist of dung, well-decayed, leaf mould, and stiff loam mixed together, this should be applied just when the plants are throwing up their flower-stalks. Should the weather be dry and hot in April, as is sometimes the case, water should be freely administered.

R. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hardy Annuals for Flowering Beneath Standard Roses.—I wish to know the best annuals to sow or plant in Rose circles at the end of this month. They should be hardy enough to stand the winter on a dry soil.—A. [Sweet Alyssum, Limnathes Douglasii, Leptosiphon densiflorus, roseus, and luteus; Nemophila, Collinsia grandiflora, verna, and bicolor; Silene pendula, S. Armeria, Eschscholzia crocea, Godetia tenella, vininea; Saponaria calabrica, Hymenoxys californica, Ionopsidium acaule, and Gilia tricolor.]

Weeds on Walks.—The following method of destroying weeds on walks is pursued at the Mint in Paris, with good effect:—Ten gallons water, 20 lbs. quicklime, and 2 lbs. flowers of sulphur are boiled in an iron vessel; after settling, the clear part is thrown off and used when needed. Care must be taken, for if it will destroy weeds, it will just as certainly destroy edgings and border flowers if sprinkled on them. Weeds thus treated are said to disappear. —[Have any of our correspondents tried this?]

Pansies.—We have sent you a few Pansies, both fancy and show kinds, for your opinion.—J. COCKER & SONS, Aberdeen. [Among the show kinds, the best were Black Diamond, a deep velvety-maroon self, with a yellow eye; William Wallace, a dark violet-purple self, with an orange eye; and W. F. Gunn, yellow, blotched with maroon, all three fine kinds, though somewhat out of condition. The fancy varieties, one and all, are well varied as to colour, and will make effective border flowers.]

Silver-leaved Edging Plant.—As regards the inquiry of "R. J. K.," in last week's GARDEN (see p. 270), I would suggest that Veronica candida would suit his purpose perfectly. It is quite hardy, very beautiful, and easily propagated; it would make a good match, as to size, for Golden Feverfew, but not as regards colour; for white and yellow never look well together. This Veronica is also a useful plant for bedding or clumping; its short deep purple spikes of flower, resting on a cushion of silver, have a beautiful effect. There are two plants in cultivation under the names of candida and canescens, but whether they are distinct or not I am unable to say.—THOS. WILLIAMS.

Dwarf Plants for Rhododendron Beds.—Will you kindly oblige me by giving a list of dwarf plants suitable for planting in good peaty soil, beneath and among choice Rhododendrons and other American plants?—J. Q. R. [Numbers of beautiful dwarf plants may be grown with advantage in peat beds, as, for example, the Starflower (Trientalis), the white wood Lily (Trillium grandiflorum), variegated Partridge berry (Mitchella repens), the Blood root (Sanguinaria canadensis), the Podophyllum, the wood and the common Forget-me-nots, Rhexia virginica, Spigelia marylandica, Cypripedium spectabile and pubescens, Gaultheria procumbens, Lammæa borealis, Epigaea repens, and Epimeris in variety. Aegne microphylla, Asperula odorata, Campanula heterocarpa, Cornus canadensis, Dryas octopetala, Erpeton reniforme, Hepatica angulosa and the varieties of the common species, Ionopsidium acaule, various Mimulus, Nertera depressa, Nierembergia rivularis, Phlox reptans, Selaginella denticulata and helvetica, Smilacina bifolia, different kinds of Violas, and double Primroses in variety. For growing near the centres of large beds of Rhododendrons, &c., such plants as the Lilies, Gladioli, and Sparaxis pulcherrima are admirably suited.]

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

Baskets of Flowers.

SMALL baskets of flowers, if neatly arranged, form attractive ornaments on either the drawing-room or dining-room tables. Such baskets may consist of glass, china, or wicker-work, according to the taste of the purchaser. If of wicker-work, zinc pans should be made to fit into them, in order to hold damp sand or Moss in which the stems of flowers are to be placed. Clear glass, however, in my opinion, shows up the colours of flowers and the variously tinted foliage of the plants better than any other material; next to glass, I like plain white wicker baskets of graceful shape. In glass baskets the flowers should nestle among fresh green coloured Moss, instead of sand, which, when seen through glass, has a bad effect. In the case of wicker baskets, however, either material may be employed. The selections in reference to colours and flowers must be, of course, according to taste; some prefer Roses all of one colour, such as crimson; others like white and pink, and some mixed colours. *Maréchal Niel* may be used in such baskets with good effect, both in the form of half-opened buds set off with its own foliage, and the young brown leaves of other Roses. Round the handle of Rose baskets of this kind, may be twisted a spray of *Lygodium scandens*, but a piece of variegated Ivy, *Japan Honeysuckle*, or anything of that kind would look quite as effectively. Some mix different Ferns with Roses in preference to using their own foliage; but I like their own leaves best when the arrangement consists wholly of Roses; if for mixed flowers, then light fronds of Fern may be used with advantage. Nothing is more effective mixed through all kinds of arrangements in which yellow Roses are employed, be they blooms of *Maréchal Niel* or of *Gloire de Dijon*, than the young flower shoots of the common climbing Rose, so much employed for covering fences, &c.; the deep brown of the foliage making the yellow Roses look even more lovely, when in close contact with it, than they otherwise would be. I have arranged a small glass basket with pink Moss Rose buds and trusses of *Stephanotis*, the whole being toned down with light fronds of *Maiden-hair Fern*; no other Fern did I use, even round the edge and across the handle, and I felt much pleased with the result. The fronds which I employed for twisting round the handle being many shades lighter in colour than those used in other parts of the basket, diminished what sameness it might otherwise have had. In a small wicker basket, one single Water Lily, with a few sprays of blue *Forget-me-nots*, wild Grasses, and a few fronds of such British Ferns as *Asplenium Adiantum-nigrum*, *A. Trichomanes*, *A. marinum*, and *Blechnum spicant*, or even the tips of the fronds of the common *Brake*, have a fine appearance. In an arrangement of this kind a small spray of light-coloured variegated Ivy might be twisted round the handle with good effect; but the variegation should be silvery not golden, as the latter would not look well placed against the pure white of the Lily.

A Vase of Roses.

To arrange a vase of Roses effectively is no easy matter. At many horticultural exhibitions a class is devoted to vases and epergnes of Roses, in which no other flower is allowed to compete, but any foliage that the decorator may be pleased to select may be added. I have seen many such stands staged, and when I first began to exhibit, I took a prize for one at the Crystal Palace in this class myself; but I can look back now, even to my own, and come to the conclusion that none of the exhibitions were so good as they ought to have been. All had the same heavy packed look, as if each exhibitor's great object had been to see how many dozen Roses could be packed into each tazza. After many trials in different ways, I find that no vase of Roses can be made to look well, unless each bloom and leaf have been previously wired. This may at first glance appear to be a heavy undertaking, and so it is, but the result will never be happy unless each leaf can be bent into any required curve, just as an artificial one is managed. Down the stem of the Rose should also be bound a stub wire, for the same purpose. The advantages of mounting Roses on wires is as follows: they can be bent out into any shape required;

they stand up more firmly than they otherwise would do; and last fresh just double the length of time they would if not so treated. Having before explained how a Rose should be wired, I need not again go over that ground. In arranging a March stand of Roses, each tier well shaded off, has a pretty appearance. Lay in the bottom dish deep pink and yellow kinds; in the upper, lighter shades; and the trumpet should be filled with buds of a still lighter tint; crimsons should be arranged in the same way. No flower looks handsomer, or is more useful for decorative purposes, than the Rose, but to make it so, it must be treated as I have above described, when the trouble will be well repaid by the effect produced.

A. HASSARD.

PRESERVING CUT FLOWERS.

It is not everyone who has the opportunity of cutting choice flowers from the plants just at the moment when they are required for use, and under such circumstances their preservation for a few hours, or even days, becomes a matter of importance. Even professional bouquet-makers, who receive supplies of fresh flowers every morning, find it necessary to adopt preservative measures; and I have often thought that if amateurs, more especially ladies, understood more thoroughly what precautions were necessary they would not be so often disappointed in their attempts to keep cut blossoms and foliage fresh. What, let us inquire, causes flowers to droop prematurely after being removed from the plant? Flowers, like leaves, absorb juices which reach them through the stem, and, while uncut, the supply is continuous, but the case is wholly different when they are cut; the supply of fluid then ceases while evaporation goes on, often more rapidly than before, especially if they are carried in the hand or placed in a dry atmosphere. To imitate, to some extent, the supply of moisture from below we place the stalks in water, in order to enable them to absorb moisture, to counteract the evaporation which is continually taking place, and, in many cases, such as those of Water Lilies, Iris, Narcissus, and similar flowers, which have thick succulent flower-stems, this is sufficient, as well as in those of hardy herbaceous and border plants, such as Wallflowers, Stocks, Violets, *Mignonette*, and scarlet *Lobelias*, all of which will continue to open fresh flower-buds for at least a week or ten days after being cut, especially if they have been removed with a sharp knife—for scissors crush the tubes of the stems, and so prevent their power of absorption. If the flowers are not immediately required they may be preserved fresh for several days by placing them in flat zinc or earthenware pans of water and living *Sphagnum Moss*; each flower should be placed separately, inserting its freshly cut stem through the Moss into the thin stratum of water below. The edges of the pan should be deep enough to over-top the flowers and foliage, and as each pan is filled, dip a cloth or napkin in cold spring water, and, after wringing it out, spread it evenly over the surface of the pan; if the latter is over a foot in diameter, some support must be placed in the centre, so as to keep the cloth off the flowers. Another excellent plan, where flowers have only to be kept fresh for a few hours, is to spread a wet cloth on a flat board, and to gently lay the flowers on it, covering the whole afterwards with a large glass shade or bell-glass, or if this is not at hand, an earthenware bowl, or even a wooden box may be inverted over them, and will answer nearly as well. This plan may also be modified in the case of bouquets not immediately required. In Covent Garden and elsewhere, the florists keep their choicest cut flowers in close fitting drawers or boxes lined with zinc, a layer of moist *Sphagnum* or *Hypnum Moss*, being laid on the bottom to keep the atmosphere cool and moist. Sometimes they are laid on wet Moss in a tray and placed on a cool moist cellar floor, where they will keep fresh for a considerable time. Any of these plans, the main object of which is to check evaporation, may be adopted in cases in which it is requisite to keep flowers for a short time after they are cut, and before they are required for use. Clear water is as good as anything for vases in which flowers are arranged, and if they are of transparent material nothing else can be used, but, if opaque, wet sand has the advantage of retaining the flowers more firmly in their places, while wet Moss continually throws off moisture

in the form of vapour, and thus assists in checking evaporation. Some recommend placing powdered charcoal and camphor in the water, and assert that flowers last longer when these are used than when in pure water only, but I consider that to be a mistake. Powdered charcoal will certainly do much towards keeping the water pure and free from bad smells for a considerable time, but, after many experiments, I have failed to discover any other advantages belonging to it; my flowers always keep best in clear water, changed every other morning, when the bases of the flower-stems are cut with a sharp knife, so as to afford every facility for active absorption of moisture. A weak solution of sal-ammoniac has been recommended for keeping flowers fresh, but, the advantages of using this, like those of other nostrums, are more apparent than real.

All fronds of Ferns and other foliage should be immersed in water as soon as cut, and they may afterwards be laid on a tray of Moss, as recommended for flowers. The latter may be temporarily revived by re-cutting the stalks and plunging them into water, as hot as the hand will bear it, for a few minutes; and, if covered with a bell-glass or inverted shade, they will revive sooner than without such covering. Another point connected with the duration of flowers in a cut state deserves more attention than it has hitherto received, and that is prevention of the flowers from becoming fertilised, as they seldom last long—even when left on the plants—after that takes place; besides, the pollen of some flowers, more especially that of Lilies, has a bad odour, and soils the purity of the petals when shed on them. Cultivators are aware of this fact, and either remove the anthers or stigma with a sharp pointed pair of scissors, or give them a dexterous touch with a gum brush, so as to prevent the escape of the pollen. Flowers so treated last much longer than those allowed to take their chance in the usual way, for it is a fact that many flowers droop directly the pollen is shed or the stigma fertilised. This is the case with Phalænopsids and other Orchids which, under ordinary circumstances, last fresh for fully a month or six weeks; but, directly a flower is fertilised—either intentionally, by insect agency, or by accident—the petals wither and collapse, and the flower quickly fades. Gumming is also resorted to by bouquet-makers in the case of Azaleas, zonal and fancy Pelargoniums, Rhododendrons, and other flowers of a fragile character. The process is extremely simple—a drop of gum or prepared mucilage is allowed to fall down into the centre of each flower; and after several are thus operated on they are placed in rows to dry. The gum sets in a mass at the base of the petals, and firmly unites them to the base of the stigma, so that the flowers last much longer than they otherwise would do, and the danger of the petals falling at an unlucky moment and leaving an ugly hole in the bouquet, wreath, vase, or other arrangement is, to a great extent, obviated. The natural power of endurance, after being cut, is very variable in flowers. Orchids, Heaths, Narcissus, Forget-me-nots, and Wallflowers, last from one to three or even four weeks, under good management, after being cut from the plants. Three or four days is a fair average duration for ordinary flowers; and, in making up arrangements, the individual capability of the different flowers employed to resist decay should be carefully studied. Camellias last well if skilfully handled, but no flower, if we except Gloxinias, is liable to suffer so soon from slight bruises or even gentle contact with other flowers as the Camellia. *Eucharis amazonica*, *Gardenias*, *Rondeletia*, *Euphorbia jacquiniæflora* and *E. splendens*, *Bouvardias*, *Lily of the Valley*, and *Christmas Roses*, all last well; as do also *Stephanotis*, *Heliotrope*, *Spiræa*, *Dielytra*, and most bulbous flowers, such as *Hyacinths*, *Amaryllis*, *Crinums*, and *Pancratium fragrans*. F. W. B.

Leaf and Flower Impressions.—Oil a piece of white paper on one side; hold the side that is oiled over a lamp or pipe, not smoke till quite black; place the leaf on the black surface, as the veins and fibres of the leaf show plainer on the under part; now press it on all parts of the leaf with the fingers; then take up the leaf and put the black oiled sides on the page of a book (made for leaf impressions) with an extra piece of paper on the top to prevent smutting the opposite page; press it a few moments; then remove the green leaf, and the impression will be left on the page as beautiful as an engraving. Flowers of single corolla can be pressed in like manner. Many of the Geranium leaves make beautiful impressions. The impression book may be made still more interesting by giving botanical classifications of each leaf and flower.

THE KITCHEN GARDEN.

CAULIFLOWER-GROWING IN MARKET GARDENS.

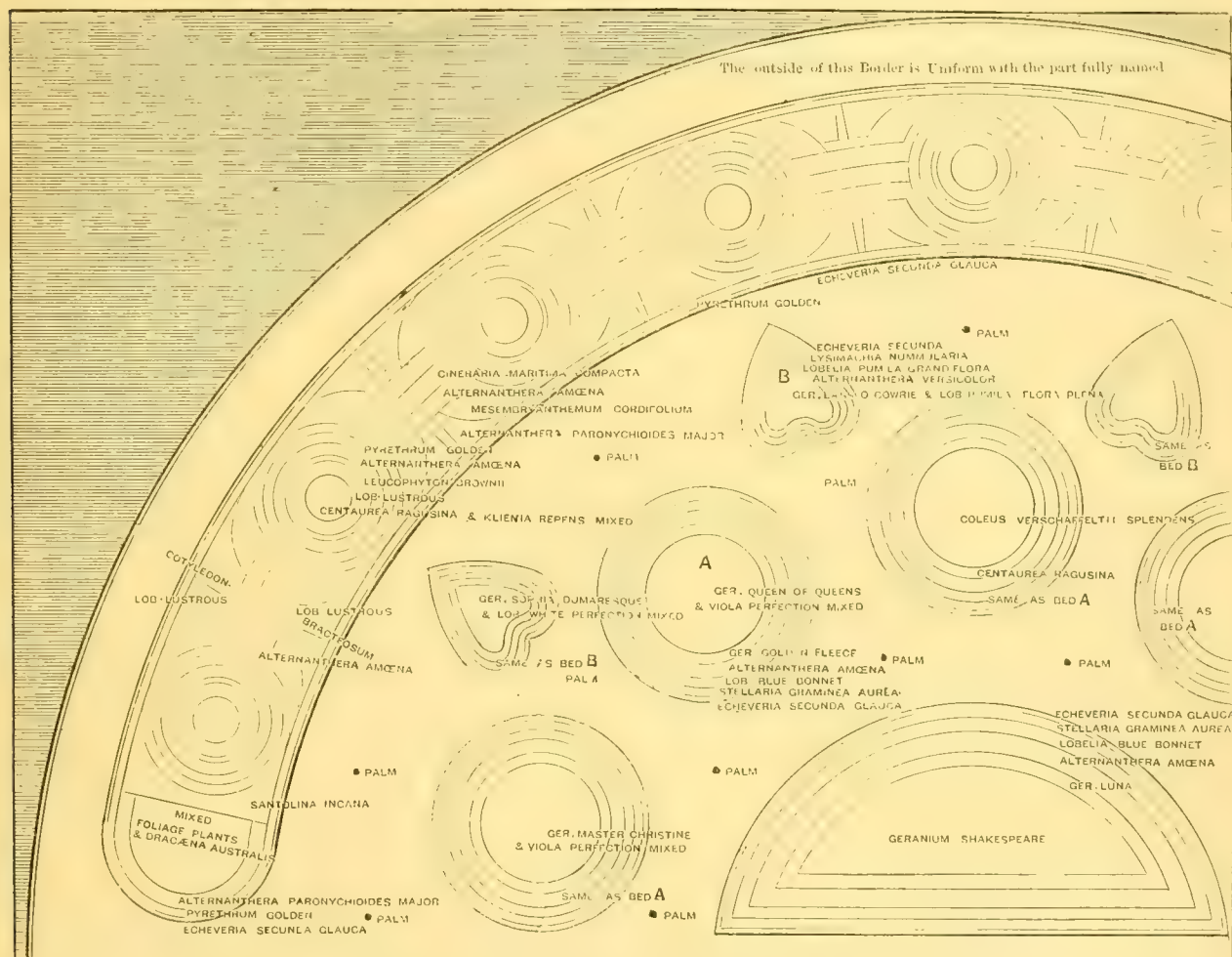
This is, perhaps, the most important of market garden crops, and one to which many hundred acres of land are devoted in the vicinity of London. Cauliflowers were at one time all cut and sent into market; but now, Messrs. Crosse & Blackwell purchase the entire produce of extensive fields for pickling purposes. For ordinary market use, earliness is the great end to be attained, for not only is the price for early produce better than that for late, but there is an advantage in having the ground soon cleared, and ready for another crop. Market gardeners seldom make many sowings of Cauliflowers; one or two in autumn, and one or two in spring, being the usual number. The first autumn-sowing is made out of doors, sometime between the last week in August and the third week in September; and the second one, in frames, in the last week of September or first week in October. From these two sowings, Cauliflowers are obtained from the last week in April to the end of June. The first spring-sowing, if the autumn one is a failure, is made in a frame in the last week of February or first week of March, or it may be made in the open border, any time during the first fortnight of March; from this sowing, a crop is obtained, from the middle of June till August or September. The third sowing is commonly made in beds, in some open quarter, between the middle of April and the first week in May, in order to furnish an autumn crop.

Sowing and Winter Protection.

Different market gardeners have different times for sowing Cauliflowers, but it is universally understood that strong grossly grown plants do not stand the winter so well as medium-sized ones, and they are also more liable to "button." Moderate-sized plants are decidedly the best for mild winters, but in the event of very severe winters occurring, strong plants are the best. The first autumn sowing is made on a well sheltered piece of ground or a warm open quarter, in beds from 4 to 6 feet wide, and the majority of growers make this sowing in the second or third weeks of September. The young plants are allowed to remain in the seed bed until the end of October, or even the middle of November, according to the state of the weather; the milder it is the longer the plants are left in the seed-beds, in which they are kept rigidly clean, and the soil kept loose amongst them by means of the hoe. In the event of frosty weather setting in whilst the plants are in the seed-beds they are protected by means of mats supported on short stakes 18 inches above the ground. Of these stakes, five rows are inserted in the beds, viz., a row on either side, another in the middle, and other two, one being on either side of the middle row. Sometimes, a wooden board about 10 inches or a foot wide, is set on edge along the centres of the beds and two rows of short stakes are put in on either side to support it. This is practised in Mr. Broadbank's grounds in the Fulham Fields, and he considers it an efficient protection from frosty winds. Hoops and mats are also employed for a similar purpose. Where room is limited, and the weather appears mild, young Cauliflowers are often wintered in the beds where they were sown, or they are pricked off into raised beds of light soil not likely to be soaked with wet in winter. Here they are sometimes left unprotected, and at other times they are covered with hoops and mats. Continued dampness of soil and atmosphere is their worst enemy, as it induces growth so soft that it cannot withstand frost so well as that produced on high and dry ground. The frames in which Cauliflowers are wintered are put up in the middle of October in a sheltered spot sloping to the south. They are generally those in which Cucumbers have been grown during summer, and after they have been fixed in the positions they are to occupy, they are filled to within 8 inches of the top with ordinary soil firmly trampled down with the feet; over this hard bottoming 3 or 4 inches deep of a better kind of soil is sifted, and in this the Cauliflowers are planted 3 inches or so apart. Thus circumstanced, they are allowed to remain until the February following and early part of March without any further care beyond that of keeping the sashes shut in the event of sharp frosts, cold winds, hail, or rain, and tilting them up at front and back during favourable weather, and on very fine days drawing them

off entirely. Cold rains are very injurious to Cauliflowers, but a warm shower in February benefits them. Sometimes the plants grow so strongly—not a good sign—that their leaves touch or press against the sashes; when that happens the sashes should be tilted up at front and back, night and day, with pieces of wood or brick, otherwise frost would injure such leaves as touch the glass. Dry sand, kept in a shed for the purpose, is scattered amongst the plants two or three times while they are in frames, in order to obviate damp, and such plants as show signs of “buttoning” are immediately pulled out to give the others more room. Besides wintering them in frames, hand-glasses are extensively used for a similar purpose. Where they are employed, an open field or quarter is lined off in rows 6 feet apart, intersected by others either

allowed abundance of ventilation, and are otherwise treated in the same way as those in frames, and where the tops of the hand-glasses are not moveable, which they should be, the whole is tilted up during fine weather, on the south side, by means of a small flower-pot. The end of January and the month of February are the usual times for planting under hand-lights, but in this case the plants are transferred thence from the frames, and planted as already described. As soon as the plants become too thick, say in March or first fortnight of April, they are reduced to three or four, by carefully lifting all others, and planting them in rows, in open quarters or under other hand-lights. Under any circumstances, the plants in time get too large for their protectors, but, nevertheless, the latter are retained, and raised by means of soil drawn around



Flower Garden in front of the Cottage in Kensington Gardens. (See page 297.)

6 or 4 feet asunder. At every intersection nine Cauliflow-ers are planted in a sufficiently small space to be conveniently covered with cloches or hand-lights, which are immediately placed over them, and a little earth is drawn around the base of such lights, so as to shut up all apertures, and turn aside cold currents of wind. This is done about the end of October and beginning of November.

Intercropping and Treatment under Hand-lights.

The empty space between the rows of hand-lights is planted with Coleworts, three rows being put in the widest or 6-feet lines, and two rows in the 4-foot spaces. In spring these Coleworts are either thinned out, or entirely removed for bunching, and a crop of Cos Lettuces is planted in their place. As soon as the Cauliflowers have become established, they are

them in the form of a basin, thus serving two purposes, viz., that of raising the glasses, and at the same time retaining water; and when convenient, and time can be spared for the purpose, manure-water is given to them. From under protections such as these, Cauliflowers are generally cut towards the end of April and throughout May. Besides, market gardeners begin to cut Cauliflowers from plantations, in the open fields, in May. These latter are made from frames and surplus hand-light stock, and occupy good rich land, and if practicable, that which was trenched during the winter. The plants are put in in rows, from $2\frac{1}{2}$ to 3 feet apart, and 2 to $2\frac{1}{2}$ feet asunder in the rows. Between every row of Cauliflowers, a row of Lettuces is planted, and between every plant of the former, a plant of the latter is also planted. Mr. Steel, of Fulham, plants his first out-door crop along the south or west side of the ridges,

laid up when the ground was trenched, and where for a time they got good shelter, the ridges being eventually levelled by hoeing.

Successional Crops of Cauliflowers.

A third crop comes in three weeks after the second, and is either made from the late autumn sowing, or by means of plants wintered under hoops and mats in the open ground. A fourth plantation, which soon follows, is made from whatever plants are still left in the frames or outdoor beds. Cauliflowers are often planted on ground cropped with Radishes before the latter crop is marketable, and by the time it is so, and cleared off, the Cauliflowers will have gained good strength, when the ground will be intercropped with Lettuces. In other instances, fields are marked off into 5 feet wide beds, with 1 foot alleys between them, and these beds are sown with round-leaved Spinach. As soon as this is done, three rows of Cauliflowers are planted along the beds. The latter outgrow the former, which, by continual picking for market, is kept in check until it is eventually exhausted, leaving the Cauliflowers masters of the field. Autumn crops are obtained from spring sowings, which are thinned out a little in the seed-beds, and, when large enough for handling, are planted where they are to remain permanently. Should the weather be dry at planting time, about half-a-pint of water, or a little more, is given to each plant, and the sodden soil is soon afterwards freshened up by the hoe, thus, in some measure, preventing evaporation. Late Cauliflowers are nearly always intercropped with some other vegetable, such as Lettuces, French Beans, Celery, Seakale, &c. Mr. Myatt, of Deptford, however, departs from this rule, and thus saves much labour; for if he intercropped he would have to employ people to keep down weeds by means of the hoe; but when Cauliflowers alone occupy the ground, horse-hoes can be freely worked among the rows.

Varieties.

The Early Erfurt or Early London White is the variety used for the first crop by most market gardeners, but many others use the Walcheren for that purpose. Numbers, too, grow a quantity of both sorts for spring and early summer crops. The Walcheren, however, is the kind almost entirely grown for use after June, because it suffers less from drought than any other sort, and is not liable to "button." Snow's Winter White, an excellent sort, is, as a rule, regarded as a Broccoli; nevertheless, it has fine white solid heads, and is largely grown to succeed the Walcheren, being harder than that sort. Snow's White, if sown together with the Walcheren in April or May, makes a fine succession to it, and comes in usefully till January.

F.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Camomile Cultivation.—We have 2 acres of good gravelly soil, and have been advised to grow Camomile thereon for the London market. Would the cultivation of this plant be remunerative? Is there much trouble attached to it? and where could I get the fullest information as to cultivation and harvesting? Perhaps some of your correspondents will oblige me with answers to these questions.—B. R.

Veitch's Autumn Cauliflower.—My experience this season with this excellent variety of Cauliflower is the same as that of Mr. Gilbert (p. 276), namely, that it has stood the dry summer better than the Walcheren or any other sort. Having the advantage lately of irrigating the kitchen garden here, Veitch's has come in for a good soaking at times, and is now furnishing nice close heads, as white as snow, and of excellent flavour. The spring-planted Walcheren, and other varieties of Cauliflowers, showed miserable, tough, burnt-up heads all through the season, and, even now, the latest planted are not to be compared with Veitch's.—WM. TILLEY, *Witchbeck*.

Late Peas.—The late sown Peas have with us been a sad failure, for, although well watered in July and August, the old favourites such as Ne Plus Ultra, Veitch's Perfection, and Omega, have only furnished very scanty dishes. In the middle of July, I sowed a good breadth of early dwarf Peas, such as Alpha, Multum in Parvo, and Little Gem, and, being well-irrigated, they are now showing plenty of nice pods ready for gathering. Although these early dwarf Peas are not so prolific as the taller-growing sorts, they can be sown in rows much closer together, which makes up for the deficiency.—WM. TILLEY, *Witchbeck*.

Ne Plus Ultra Pea.—As a late summer Pea, Mr. Saul, of Stourton, writes to the *Florist*, that he has not as yet found any other kind to excel this. I have it now (Aug. 15), and have had it for some weeks in very fine condition, notwithstanding the long-continued dry weather. It is a most abundant bearer, of superior flavour, and remains a long time fit for use—all great recommendations in its favour. Those who wish to have it fine I would advise to save their own seed, and, in doing so, to pay attention to the matter by selecting only the finest pods. By this means they will secure good, genuine seed, and by sowing thinly in rows about 6 feet apart on deeply-dug ground, they will get good crops of Peas of the finest quality, well repaying any little pains or labour bestowed on them.

A POPULAR THEORY EXPLODED.

THE *Revue Scientifique* gives a long and interesting account of the researches into the respiration of plants, which M. Corenwinder has communicated to the Société des Sciences of Lille. For many years the functions of the vegetable kingdom were represented as being of an opposite kind to those of animals. Plants grew to furnish food for animals, and to render animal life possible; they formed intermediate principles which animal life destroyed; animal excretions were the natural nutriment required for vegetable life, and plants purified the air which animals deteriorated; and finally, respiration, the most continuous function of our organism, was in animals a process of absorbing oxygen and evolving carbonic acid, and in plants an absorption of carbonic acid and an evolution of oxygen. The idea arising from these views was that of harmonious opposition. Claude Bernard's experiments showing the formation of one of the most important of the intermediate principles, sugar, in the liver of animals, overthrew this theory, and suggested new views in harmony with the general tendencies of science, and led to comparisons of plants and animals, founded upon their resemblances rather than upon their differences. In tracing these resemblances, considerable difficulties were experienced in relation to the function of respiration, and it is these which M. Corenwinder claims to have removed. The reviewer remarks that since the respiration of plants was first regarded as an exhalation of oxygen derived from the carbonic acid of the air, experiments, which are now old, materially limited the force of this explanation. It has been long known that this mode of respiration depends on the action of solar rays, and is confined to portions of plants containing the green matter chlorophyl. It was then discovered that flowers not coloured green, and even green parts in the dark, did not limit their action to absorbing carbonic acid and setting free its oxygen; on the contrary, they absorbed oxygen and exhaled carbonic acid as animals do. Hence arose the ascription to plants of two modes of respiration, one nocturnal, and the other diurnal, the latter being regarded as the chief or true respiratory process. M. Corenwinder's investigations show that what has been considered diurnal respiration—viz., absorption of carbonic acid by the chlorophyl—is a digestive act, as Claude Bernard supposed, and that the real respiration of plants resembles that of animals. Buds, young shoots, and growing leaves for a certain time absorb oxygen and exhale carbonic acid in an ostensible way, and without interruption by day or night, except in the spring, when the nocturnal temperature is low, and the process is scarcely apparent. Light and heat accelerate it. As the buds or leaves grow beyond a certain point of development, this absorption of oxygen and exhalation of carbonic acid diminishes sensibly, and ceases to be apparent when they are fully grown. The amount of this action observable in any plant is proportioned to the quantity of leaf, &c., in active growth. The limit beyond which plants cease to exhale carbonic acid in an ostensible way during the day, varies much according to the species, some manifesting it a long while, others losing the faculty quickly. In the first category M. Corenwinder places *Dielytra spectabilis*, and in the latter Beetroot leaves.

To ascertain why the exhalation of carbonic acid apparently ceased in adult leaves, when it ought, by analogy with animals, to be in most vigour, M. Corenwinder proceeded to analyse the leaf contents in different periods of growth. Lilac and Maple leaves were used in two sets of observations extending from April 15 to October 31. The proportion of water in leaves diminishes as the season advances, but the decrease is not regular, considerable rains occasionally throwing it back. Operating upon dried leaves, M. Corenwinder found that the proportions of nitrogenous and carbonaceous matters varied according to the stage of growth, and also according to the nature of the plants; Maple, for example, containing more nitrogenous matter than Lilac, and country trees more than town ones. Omitting the tabular statements of analyses, the general result was that during the growth of leaves, their proportion of nitrogenous to other matters diminishes rapidly. It is at a maximum when they first emerge from the bud, it lessens quickly about the beginning of July, when the fruit of the Lilac is formed. After this it is slightly variable, but seems to experience a small increase as the leaves approach maturity, and is at a minimum when that period is reached. At the time of the Lilac leaves falling, their nitrogenous matter amounts to about one-third of the proportion they had in the beginning; in Maple it is a trifle more. The carbonaceous matter augments rapidly from the moment the leaves emerge from the buds till the completion of their growth, which, in the Lilac, is when the flowers are nearly open. There is a slight increase beyond this up to September, and then, in Maple, a sensible depression, and the maximum proportion is at the time of the fall when they have lost a good deal of their nitrogenous matter. The quantity of Ash increases rapidly up to June, after which it is less pronounced. Withered leaves of Maple contain less mineral matter than those of Lilac, which lose a slight proportion in

the course of their existence—probably through rains carrying off some of their soluble salts.

It now remains to connect these facts of analysis with the life history of the plants. During the entire growth period the nitrogenous matters are very abundant, probably organised, and endowed with an existence independent of the vegetable cells. They exercise the animal function of respiration, which then is the predominant operation. At first, the carbonic acid resulting from this process is only partly retained by the reducing action of the chlorophyl. Thus the young plant exposed to light and air exhales an excess of carbonic acid. In the second period the relative proportion of nitrogenous matters diminishes and the carbonaceous matters increase. The plant then only exhales a small quantity of carbonic acid, the bulk of it being retained by the chlorophyl, which decomposes it and fixes the carbon. At a later date the carbonic acid ceases to appear, the gas being absorbed by the chlorophyl as quickly as it is evolved by respiration. The respiratory phenomena are then masked, and can only be revealed by indirect processes. In an experiment of Bous-singault it was found that leaves placed in a bell-glass containing pure hydrogen mixed with a little carbonic acid, in a room feebly illuminated, gave out a little oxygen, showing that the assimilation of carbon had not ceased, which it only does in total darkness. It is also known that in a similar amount of light leaves in a glass full of air give out carbonic acid in inspiring oxygen; and, putting the two facts together, it appears that the two functions of the plant—respiration and assimilation of carbon—are simultaneous, but that the last becomes so attenuated that it cannot completely mask the effects of the former. M. Corenwinder finds support for his theory in the fact that the white-tufted leaves found in a variety of Maize, which contain no chlorophyl, have not the faculty of sensibly absorbing carbonic acid and exhaling oxygen as the green and purple Maize leaves have in sunlight; but they do exhale sensible quantities of carbonic acid in daylight. Senebier had noticed that the red and yellow tufts of the tricoloured Amaranth did not give off oxygen when exposed to the sun, but that the leaves of the red Amaranth had this property. So leaves naturally green, but changing to red at the end of their lives, such as those of the Virginian Creeper, completely cease to absorb carbonic acid and exhale oxygen. Faded-leaves, as M. Corenwinder found, emit carbonic acid, though not as an act of vitality, but of decay. Analysing some white leaves gathered from a Maple, and also some green ones from the same tree, the former were found to contain in 100 parts (dried) 17.06 of nitrogenous matter, and the latter only 13.75. Thus white leaves are proportionately richer in nitrogenous matter than green ones, the latter being the richer in carbonaceous matter. Respiration he considers the function of the organised nitrogenous matter; assimilation of carbon that of organised matter chiefly, if not solely, formed of ternary compounds. For a more detailed exposition of his processes and results the original papers may be consulted. If his opinions should be confirmed, we shall have the curious fact of organisms digesting and assimilating as food that which is an excretion of their own respiratory system.—*Academy*.

The Sleep of Plants.—With a great number of plants, both leaves and flowers assume during the night a very different position from that which they affect during the day. To this curious phenomenon Linnaeus applies the name of vegetable sleep. Thus, in the case of the False Acacia, the leaves of which hang towards the ground during the night, the fifteen or twenty-one leaflets which compose them spread themselves out horizontally at the rising of the sun, and eventually raise themselves up in such a manner as to touch each other by their superior surfaces. The contrary takes place with the Colutea, so common in copses; being spread out horizontally during the day, in the night the leaflets raise themselves perpendicularly upon the petiole, and stand opposite each other by their upper surfaces. With the Cassia marylandica the situation of the leaflets is exactly contrary to that occupied by the leaflets of the Colutea; these, being also horizontal during the daytime, turn themselves down backwards in the night until they touch each other by their lower surfaces. With the sensitive plant *Mimosa pudica*, and its congeners, the leaflets of the four feathery composing its leaves being spread out during the day, bend themselves during the night along the petioles, covering each other, the lower face being above. In the case of the *Tephrosia caribæa*, the movement is quite opposite, the leaflets bending themselves from the summit of the leaf towards the base. This curious faculty, indeed, shows itself generally, and in the highest degree, among the leguminous plants. It is but rarely found in other families, and even then is usually isolated in some genera, such as the *Oxalis*, for example. Philosophers have hitherto been unable to explain, satisfactorily, the sleep of leaves and flowers, spontaneous and excited movements, &c. A crowd of hypotheses,

many of them very ingenious, have appeared from time to time, but they destroy each other and disappear before serious examination. The author who has most successfully applied himself to these studies, Mons. Dutrochet, affirms, in order to explain the phenomena, that plants are furnished, the same as animals, with nervous systems, and in truth, the explanation which he gives, following a vast number of experiences and delicate anatomical dissections, appear to favour that conjecture.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Hardy Flowers, Alpine Plants, and the Wild Garden.

THE fine old *Stenactis speciosus* is now gay with its second crop of bloom, which would have been all the stronger if the stems had been removed from the plants as soon as the earlier blossoms were over. *Rudbeckia fulgida* and *Newmanni* (not *hirta*—it is only a biennial) are still wonderfully bright, and, what is more, their lustre is undiminished, even by a drenching rain; the deep golden florets of the ray contrast beautifully with the dark chocolate coloured disk; dwarf in habit, so rigid in growth as to require no staking, they have, however, one fault, that, being surface rooters, they are liable to suffer, and have, indeed, suffered much this season, from drought. So closely related to these, as at one time to have been included in the genus, are the lovely *Echinaceas*; the freest grower and the one most generally met with is *E. intermedia*; with us it attains a height of 3 feet or more, and when each stem is terminated with a crimson-rayed flower, fully 5 inches in diameter, it is certainly one of the most effective and beautiful hardy plants to be seen in bloom at this season; the other two species, viz., *E. purpurea* and *E. serotina*, are dwarfer, and much more rarely seen, as is also the *E. angustifolia*, the true form of which is still only to be found, we believe, in cultivation with our old friend, Mr. Leeds, of Manchester. The *Heleniums* are all pretty, most abundant bloomers, and well adapted for the back row of the herbaceous border, or for enlivening the shrubbery with their masses of golden bloom; amongst tall ones, *autumnale* and *commutatum* are the best, and among the dwarf, *Bolanderi* and the true *atropurpureum* are equally desirable. Nor must we omit the double perennial Sunflower (*Helianthus multiflorus plenus*). Though some of the early blooming *Eryngiums* have disappeared, we have yet *E. amethystinum*, glowing with its blue metallic lustre, which renders its name so appropriate; *E. glomeratum* and *creticum* are still enjoying a fair share of beauty; and *E. maritimum*, our own "Sea Holly," is yet attractive, owing to its white peculiarly-contorted foliage; it is, however, a dwarf when compared with the foregoing species. *Campanulas* have nearly passed, but the noble old *pyramidalis*, which, under favourable culture, sends up its towering spikes to a height of 6 feet, is still an object of beauty; as is also the dwarf *C. isophylla*, at one time known by the very appropriate name of *floribunda*. It is a neat-clustered plant for a rockery, with much larger flowers than old *garganica* or *Cymbalaria*; it does not ripen seeds—at least has not done so with me—but strikes freely in spring, with the aid of a gentle bottom-heat. *Phloxes*, whose names and varieties are legion, are also beautiful, but these, as well as the many showy hybrid *Pentstemons*, have long since been relegated to the florists' department, so I shall not deal with them. *Scabiosa caucasica*, with its large, flat, expanded capitula of lavender blossoms, is a plant well worth cultivation, as is also *S. Gram-muntia*, whose finely cut foliage is effective and pretty, independent of its blue flowers. Both these may be freely produced from seed; but beware of hybridisation in the latter—the former always comes true. *Lobelias*, such as *ignea* (with its dark foliage) and old *cardinalis*, both of which have intensely brilliant scarlet flowers, as well as the numberless fine hybrids (in all shades of puce, purple, and blue) are, where they thrive well, the gayest of the gay. They, however, have their likes and dislikes, and with us, will neither flourish in summer, nor stand through even the mildest of winters. The *Statice*s, or Sea Lavenders, are all fine autumn plants, adapted equally well for the border and the bouquet; nay, more, not unfrequently, in a dried state, constituting a very elegant feature in the floral decoration of ladies' bonnets. *S. Tormentilla*, *scoparia*, and *Besseriana*, are tall growers, as compared with *S. latifolia*, *elata*, *Smithi*, and *Willdenowi*. Besides these, we have many dwarf species, some not exceeding 3 inches in height, and all are beautiful. The large ones are most impatient of removal, and require two or three years to attain their full development, after such an ordeal. As I now write, one of our finest and most effective plants, in respect of habit, as well as bloom, is the Japanese *Polygonum Sieboldi*, sometimes called also *cuspidatum*; it has this season attained a height of 9 or 10 feet, carrying its foliage from the very base, in fully developed perfection, and now

its beautiful branches are pendent in graceful curves, with the weight of the feathery flowers, individually small, and inconspicuous, but in mass and arrangement, the very perfection of beauty. One fault it has is, that it is a sad rambler, so much so, that in a very few years, a single plant would cover half an acre of ground, and it will hold its own with a vigour and persistency that annihilates all competitors. A closely-allied species, though quite dwarf in habit, is *Polygonum japonicum*, whose broadly heart-shaped leaves are beautifully crimped at the margins. Nor must we omit the lovely pink-flowered *P. vacinifolium*, whose dwarf creeping habit, and trailing stems, covered with small light green leaves, decked all over with charming spikes, is a picture of beauty. Some may have tried its culture unsuccessfully; to such, we would say, that it will be found perfectly at home in a bed composed of half peat, and half leaf soil, with a nice sprinkling of sharp sand in it. Amongst *Cyclamens*, *europæum*, in its pink and white forms, appears (like the *Colchicums*), as it were, to form a connecting link between the autumn and the spring. Old established plants, and those I now have in my eye, have grown in the same place for twenty years to my knowledge, and, possibly, their age may be nearer forty than twenty, are now a mass of bloom; and, in early spring, they will be covered with quantities of their lovely painted leaves, for which alone, independent of the flowers, their culture is desirable. The *Tritoma Uvaria*, and other varieties, are now in full blossom; and well do they merit the important position they have attained, being, without exception, the grandest autumn decorative plant which we have. Wondrous, too, is the variety which the *Gladiolus* has assumed under the hands of the florists who have made its hybridisation a speciality. This dry season has, however, been anything but favourable to their vigorous growth, many of them having been attacked with red spider in the early stages of their development. *Tritonia aurea*, or *Crocasmia* as it is sometimes called, is a plant supposed by many to be tender; but it has withstood the severity of our winters for the past five years, and, thus grown, forms an equally valuable plant out of doors as it has hitherto done in the greenhouse for autumn decoration. The *Commelynas*—viz., *ecolestis*, *scapigera*, and *angustifolia*—when grown near the *Tritonia*, form a lovely contrast when the azure-blue flowers mix with the orange blossoms of the latter. They have fascicles of thick fleshy roots, and ought to be planted pretty deeply, else they are apt to suffer from the frost. The *Marvel of Peru* (*Mirabilis Jalapa*), though generally grown as an annual, is really a good perennial, which, under the protective influence of tolerably deep planting, will produce year after year an increasingly strong growth, accompanied by an early and long protracted bloom; the best plan is to lift the roots after the first year's growth, and store them away as we do Dahlias, replanting again in early spring, and allowing about 6 inches of soil above the crown. Though Dahlias, as generally recognised, are not within our province, yet there are some old species that are worth growing, and none more so than the dwarf lax-growing one known by the various names of *D. glabrata*, *repens*, and *scapigera*; it has a fascicled root, the same as its more familiar congeners, and is perfectly hardy if treated as the *Marvel of Peru*; its tiny flowers, no bigger than a penny-piece, vary in tint from a rosy-white to a deep lavender-purple; and are sufficiently neat to answer even for a button-hole bouquet; they are gracefully supported on long slender stalks, and continue to flower freely to the end of October. Of more lofty growth are *D. coccinea* and *Cervantesi*; of these the latter is the more desirable on account of its finer cut foliage and glaucous tint, which at once distinguishes it from the common forms; but, for grand foliage their giant relation, *D. imperialis*, bears the palm; unfortunately, its blossoms are so late that they are always "nipped" by the bud. *Lilium tigrinum splendens* is one of the finest of our autumn Lilies, we have it now full 5 feet high, with some twenty or more flowers in a panicle, just expanding into rare beauty, reminding me of a large group I saw about this time last year in Mr. Ware's nursery, that was a conspicuous object full half a mile off; possibly some of my readers may say this is a droll sort of calendar of operations. In my next article I may indulge in drier details, more in keeping with such a title, and give time for a change in the floral panorama, ere I analyse its individual parts again.—J. C. NIVEN, *Botanic Gardens, Hull*.

The Flower Garden and Pleasure Grounds.

With the exception of keeping everything connected with this department in the best possible order, little at present is required to be done. The flower beds are still in full floral beauty, even more so than is usually the case at the present advanced period of the year—a circumstance possibly owing to the protracted drought of the earlier part of the season having retarded for a very considerable time the development of the plants, the suppressed energies of which are now, as it were, set at liberty by the genial and somewhat copious rains, which we have recently experienced;

the consequence is, the floral display in flower gardens is more gorgeous and abundant than it has been at any other period during the present season; and, in order to maintain this desirable result, as long as possible, the greatest degree of neatness and order should pervade the entire department. In cases in which it may have been difficult, or even impossible, to obtain at an earlier period, a sufficiency of cuttings of any variety of bedding plants, this deficiency may now be made good, and the propagation of all such plants should be brought to a close as speedily as possible. Even bedding *Calceolarias*, which are always found to succeed best when the cuttings are inserted somewhat late, may soon, or even now, be commenced with. These plants are most successfully propagated in cold pits or frames, either in pots or otherwise. If pots are used, they may be some 8 inches in diameter, and should be well drained, and the soil may be composed of one-half leaf-mould finely sifted, while the other half may be sharp river or pit sand, which will answer the purpose quite as well as the best silver-sand. They may be wintered in the pits or frames in which they have been struck, and will of course require the protection of mats, &c., when the weather is severe. Treated thus, they will generally be found by the end of March to be in good order for transplanting into temporary pits or trenches, where they can have the necessary protection which they may require during very severe weather; and, from such quarters, they may be safely transferred to the flower-beds early in May. Wherever it is contemplated to transplant large evergreen shrubs or trees, the present is a suitable time for performing such operations, which may, nevertheless, be successfully performed at almost any season; indeed, various opinions exist as to the best time for transplanting large Hollies, and other evergreens; but, all things considered, the present time, or from this until the middle of November, is, doubtless, the most convenient, and probably the best time to perform such operations. Up to November the soil retains sufficient warmth to encourage the development of fresh roots, and to thus repair unavoidable injuries resulting from the operation of transplanting before very severe weather is likely to set in. It will still be necessary to keep lawns constantly mown and rolled, although mowing will be less frequently necessary than it has hitherto been. Leaves have this season commenced to fall sooner than is generally the case; gravel walks must, therefore, be frequently swept and afterwards well-rolled, in order to secure solidity and smoothness of surface.—P. GRIEVE, *Culford, Burg St. Edmunds*.

Indoor Fruit Department.

Vines in pots, which were thoroughly ripened a month ago, may now be placed in a gentle heat, i.e., if Grapes are wanted in March and April; select those showing plump prominent eyes and well ripened canes for the first batch, using Black Hamburg in the dark section, and Royal Muscadine in the white division. Wash the canes with a hard brush, employing soft-soapy water, and clear the surface-soil away well down about the roots; then fill up to within an inch of the rim of the pot with a compost consisting of cow-manure and horse droppings mixed with a little fresh loam. The roots run freely and feed greedily in a compost of this kind, and at every application of water much valuable matter is washed down to the lower roots. Early growth is much facilitated by the pots being plunged in some fermenting material in which a bottom-heat of 70° can be maintained—say, here and there in a Pine bed where there is room. Where such means are unavailable set the pots on the top of hot-water pipes. A temperature of 60° by day, and 50° at night, will be found to be sufficient for the first fortnight. Dew the canes overhead both morning and afternoon. The object and advantage of forcing pot Vines is to be able to cut new Grapes at Easter, or at any other special time, when only a few are required, and when a large Vinery-ful would be too many. Vine culture, in pots, also saves Vines permanently planted out, which often suffer much, if forced, very early. Permanent Vines, if started into growth for a succession of years, in October or November, soon succumb to such unnatural treatment. The roots on which so much depends, fail to act in company with the top, and failure is the inevitable result. Pot Vines may be conveniently accommodated in an odd corner of any stove, and when eight, ten, and twelve nice bunches can be obtained from them, the original cost and after attention are fully repaid. Keep all retarded Grapes free from decaying berries, and do not let any decayed leaves remain on the Vines, or lie about on the surface of the border, as these collect and harbour damp, and otherwise render the atmosphere unwholesome. Pine suckers may yet be taken off, potted, placed in some close, warm, moist corner, and be treated as former instalments. All canvas shadings may now be removed, and carefully stored in some dry place until needed another season. Wash off any paint mixture which may have been put on the glass, and, in future, admit full

light from every possible inlet. Vines, and other deciduous climbers, which have done good service throughout the past hot summer in the way of shading, will now be opportunely casting their foliage, and will, therefore, prove no obstruction to light. The rods of these should be wintered outside—i.e., if provision exists for doing so—for, when kept in a warm temperature, they are constantly in excitement, and the result, is in every way, unsatisfactory. Mushroom-houses, in which newly-spawned beds are at work, should have the atmosphere well charged with moisture, by means of evaporating troughs, and the frequent damping of all available surfaces.—J. MUIR. *Clovenfords.*

Peaches, Melons, and Strawberries.

In late Peach-houses, in which the fruit has all been gathered, a slight watering should be given to moisten the surface; if watering has been well followed up, soakings of water should be avoided at this season until the leaves have fallen and the wood is ripe. Late Admirable is nearly over; but Lady Palmerston is just being gathered from standard trees. The earliest house will now be fit to prune, clean, and train for starting to force in another month or so. A good soaking of water should also be given if it is known that there is good drainage in the border. Moisture is essential to prevent dropping of the buds, and to assist in their setting—in short, to maintain the vigour of the trees. One of the most useful and simple dressings which can be applied to the trees is quick-lime mixed with a little clay and water to the consistence of paint; lime itself would not harm the buds in the least, but clay subdues the colour; if this is applied year after year, it will keep the trees clean from most insects; oils and soaps are unsafe, unless used with caution. In late houses, bedding plants or Fuchsias may be wintered, without injury to the trees. Melons, in low pits, will soon be over, but in trellised houses, heated by fire-heat, there is yet at least a month during which fruit may swell and ripen; keep the foliage trim, and a steady heat at the root, so that cautious waterings may be given, to keep the foliage in good health, and to swell off remaining fruits. With the late moist weather, Strawberries have made rapid progress; every encouragement must, therefore, be given to late potted sorts, in order to induce them to fill their pots with roots; let them have room, and do not over water them, an important matter, as after the pots are well filled, the crowns swell and ripen; avoid stimulants at this period, these are unnecessary where good soil has been used. Cut off all runners and dress off with the finger and thumb all side growths, so that the single central crown may be strengthened. Marguerite is a useful early sort for forcing; with us it has a strong tendency to push up secondary crowns, which are delusive, inasmuch as they give the plant the appearance of luxuriance, and owing to the pot being well furnished with foliage, there is a fine prospect of fruitfulness; but one strong crown is worth half-a-dozen weak ones, even though the foliage is sparse. In the north, early potting of Strawberries is essential, and of decided benefit to the plants, inasmuch as the summers are cooler and more moist than in the south; but in the latter, later potting may be performed with perfect success, as, on the whole, the growth is made more rapidly as the days shorten and the atmosphere gets moist; the Strawberry delights in moisture, and plants potted in early summer have to withstand the dry summer heats.—W. D., *Canford.*

Harvesting Fruits.

The harvesting of fruits, though generally hurried through, should be gone about with care and leisure. It is imprudence approaching to recklessness to sacrifice the produce of a year's anxiety and toil in order to save a day or so in harvesting fruit safely. Yet this is what is constantly being done. Fruit cannot be got on too fast; while, on the contrary, it can hardly be gathered and harvested too slowly. Even the Peach season extends from September to November; the Apple, from July to November; and Pears, from June till the frosts of winter threaten them with destruction. It is general and all-at-once gatherings that are the ruin of fruits. Almost every fruit has its own special time when it may be best gathered. That set time can only be learned by experience; but the merest novice knows that there are wide differences between the seasons of maturity of the different varieties of our main crops of fruits, such as Apples, Pears, Plums. As generally harvested, not half enough allowance is made for these and other differences. A more general knowledge concerning the ripening of fruits would extend the harvesting season over many months instead of, as now, crowding the heaviest part of it into a week or so towards the end of September. Fruit should be softly and tenderly handled, and laid in single file in baskets or trays as gathered, and carried by hand to the fruit or store-room. It should likewise be sorted, as gathered, into sizes and qualities—keepers and not keepers especially being stored apart. All small, deformed fruit should have

a place to themselves—a shelf, or such like place, for the awkward squad. The other fruit would not only keep, but look so much better by being rid of the refuse; and a fruit-room should not only be clean, cool, dry, of even temperature, and frost-proof, but should also be ornamental. A good arrangement is a series of shelves, about a yard or 4 feet wide, around the sides, a broad table in the middle, and a good wide path all round. The fruit in season can then always be displayed on the centre table, and the whole place with all in it becomes a source of pleasure and honest horticultural pride to its possessor. There are few more interesting things in a well-furnished garden than a neatly-arranged, orderly-maintained, well-filled fruit-room, such as may be seen at Sandringham, and in other great gardens; for it is quite a mistake to suppose that a fruit-room must be large to be interesting, or well suited or the sure keeping, and orderly and safe storing of fruit. On the contrary, there is no good reason why each garden, large or small, should not have a suitable room to receive and store its produce.—D. T. FISH.

Indoor Bulbs.

It is high time a few Crocuses, Snowdrops, and Squills, were potted up for early blooming. By the use of some of the autumn-blooming species, Crocuses may be had in flower successively from September to April. The autumn-flowering kinds will flower quite as early in the open ground as in pots, but during autumn the weather is often so unfavourable as to soon destroy them in the open ground; whereas, if some be grown under glass, their beauty is considerably prolonged. Unfortunately, the autumn and winter-blooming Crocuses have been so much banished from our gardens, that it is only in certain places they can now be met with. The autumn blooming kinds are *C. autumnalis*, purplish-blue; *byzantinus*, lilac, deepening to purple; *nudiflorus*, violet-purple; *sativus* (the Saffron Crocus), purple; *serotinus*, blue; and *speciosus*, blue, also very handsome. What may be termed a winter-blooming section, flowering later than the preceding, and forming a kind of intermediate floral group includes *Imperati*, violet, fawn, and white, very distinct and fine; *chrysanthus*, orange-yellow; and *nivalis*, white. The spring-flowering species, though very pretty, cannot compare with the fine garden varieties now so extensively grown, with the exception of *C. reticulatus* (Cloth of Gold) and *C. biflorus*, the Scotch Crocus, both of which are very early, and characterised by great freedom of bloom. Cloth of Gold is the only yellow variety suitable for growing in pots; the large yellow spring-flowering Crocus does not bloom so freely under glass as in the open ground. There are now many very fine varieties of Crocus vernus, producing very large and showy flowers; and among these, as especially suitable for pot culture, may be selected the following:—*Albion*, white, very large; *David Rizzio*, deep purple; *La Majesteuse*, heavily striped with violet on a white ground; *Lampighter*, bright purple; *Lilacinus superbus*, bright blue; *Mont Blanc*, pure white; *Ne Plus Ultra*, lilac-purple, edged with white; *Othello*, blue-purple; *Pride of Albion*, white, striped purple, very large and fine; *Sir J. Franklin*, large, dark purple; and *Sir Walter Scott*, very delicately pencilled with violet, one of the most beautiful varieties in cultivation. Six bulbs of any one variety, or even eight, should be placed in a 48-pot, using a good soil; and, with but little trouble, they can be had in full bloom in early spring. The Snowdrop should be grown in pots, a dozen bulbs being placed in the same sized pot as that recommended for the Crocus. The double variety produces the largest flowers, but some of both should be used. With the Snowdrop can be associated the charming spring Snowflake (*Leucojum vernum*) with its chaste Snowdrop-like blossoms, which can be got in bloom throughout March. Too much cannot be written in praise of the early-blooming Squills, especially *S. amœna*, *S. bifolia* and its white variety, and *S. sibirica*. The last has been well designated "the brightest and most beautiful of our early spring flowers," and, like *Myosotis dissitiflora*, it affords a lovely hue of blue in the early spring. The earliest to flower is *S. bifolia*, smaller and much less intense in colour than *S. sibirica*, but most charming. *S. amœna* is the latest of the three, but only just succeeding the others. Some of each of these should be potted up about six or eight bulbs in a pot, and, like the Snowdrop, they can be managed with but little difficulty. The fragrant Polyanthus Narcissus must not be excluded from our list. Two or three bulbs should be placed in a pot, the size of which should be regulated according to the dimensions of the bulbs; one bulb only in a pot is not sufficient to make an effective display. Perhaps of all spring-flowering bulbs grown in pots the Polyanthus Narcissus is the most easily managed; but the better the compost, the finer and more plentiful will be the fragrant flowers. There is so very much sameness of character among the varieties, that it is only necessary to indicate a few, and they should be *Bazelman Major*, *Gloriosa*, *Grand Primo*, and *Grand Soleil d'Or*. Others may be added, but the foregoing are fine and distinct. There are two forms of the

border Narcissus that are especially well adapted for cultivation in pots, though they lack the fragrance of the Polyanthus section. These are Ajax bicolor, or the Trompet Sulphur of the Dutch growers, the tube golden yellow, the petal pale sulphur, and Ajax maximus, the Trompet Major of the Dutch growers, deep golden yellow; flowers, very large. These are actually what are termed border varieties, but they come so fine in pots, and are of such a very showy character, that they deserve to be highly recommended for that purpose. If possible, imported roots of these should be obtained, as they are certain to flower, and are much more reliable in pots than when grown in this country. The pretty Narcissus Bulbocodium and the equally pretty *N. minor* should not be overlooked; nor should the richly fragrant Jonquil be excluded from our list, especially what is known as the Single Sweet-scented. If as soon as all these have done blooming they are carefully transplanted to the open border, they will establish themselves there, and gild the opening days of spring with their bright blossoms for many years to come.

The Kitchen Garden.

No cultivator who aims at producing first-class vegetables in all seasons, ought to be satisfied with less than from 2 to 3 feet in depth of good soil. It may not be possible to secure this in some gardens all at once, but if this object is kept steadily in view, and as far as possible acted upon, a steady and progressive improvement will certainly take place, which will soon show itself in the improvement of the crops. The two principal ways of increasing the depth of the soil available for the roots of plants are, firstly, deep trenching in autumn; and, to this end, every spare moment that can be abstracted from ordinary routine work should be occupied in turning up deeply every vacant piece of land, and throwing it up roughly, to expose as large a surface as possible to the action of the atmosphere. Where the sub-soil is decidedly bad, be content with bringing up only an inch or so to the surface, but stir the bottom up well with a strong steel fork; even this will let in the air and allow the water to percolate more freely through it than before, and will make it more suitable for bringing to the surface at the next trenching. In this way a vast improvement might be gradually made in many gardens, and I am confident that if the practice was generally carried out, the result in improved crops in all seasons would be patent to even a casual observer. "Where there's a will there's a way," and any cultivator once impressed with the necessity of deep culture, will find a way to accomplish his object—gradually and slowly it may probably be, but none the less surely on that account. The second mode of deepening and improving a poor soil is by adding to the surface everything that can be obtained that has any value either as a manurial or mechanical agent; and there are so many substances (often looked upon as valueless), about gardens, especially at this season, which, if properly utilised, would be of the greatest value in any persistent scheme of improvement. All refuse vegetable matter, whether living or dead, should be carefully treasured up, as it contains within itself the nucleus of future crops. There is such a number of substances usually called rubbish, such as the cleanings of ditches, trimmings of banks, roads, and hedges, all so easily obtained as to render the improvement of even a bad soil not so difficult a matter as at first sight it might appear. Amongst the most useful of mechanical agents for ameliorating a heavy soil may be mentioned all kinds of ashes and charred earth or clay, lime and mortar rubbish, and the *débris* from old buildings when taken down; whilst light sandy soil cannot have anything so beneficially applied to it for improving its staple as a good dressing of clay spread over the surface in autumn after trenching, and, after exposure to the action of the weather all winter, lightly forking it in in the spring before cropping. Where French Beans are in demand all the winter, two or three dozen pots may be planted to succeed those planted in frames; by making successional plantings every three weeks or so, the supply will be kept up. A position near the glass will be requisite, as also a moist atmosphere and a night temperature of not less than 60°. 24-sized pots are a handy size, they should be half filled with good rich soil, and about five Beans planted in each pot. Cover the Beans about an inch deep, and earth up when the plants are up and have made some growth. The Newington Wonder, although small, is a very useful Bean for early forcing; if well fed with liquid manure, and if all Beans are picked off when fit for use, it will continue bearing for a long time. Onions which have been taken up should now be taken under cover and stowed thinly in a dry room or on shelves; the larger should be tied in bunches, so that they can be removed to a cooler situation in February, and thus prolong the season of use. Potatoes should still be taken up in favourable weather, but avoid putting them together in large quantities in a wet state. Cut clusters of Tomatoes, and hang them in a dry airy house—this will give them an opportunity of maturing later-set fruit.—E. HOBAY.

THE ARBORETUM.

A STONELESS PLUM.

(*PRUNUS TENERRIMA*.)

WHENCE came this plant, and by whom obtained, we are unable to say. We believe, however, that it is but little known. A distinguishing peculiarity belonging to it is the fact that it is stoneless, *i.e.*, the kernel is not encased, as is usual with other Plums, in a hard shell. The tree itself is one of moderate growth, and bears flowers of an average size. Its fruit, which is heart-shaped, is of a deep violet colour, and covered with bloom so heavily as to give it a whitish appear-



A Stoneless Plum (*Prunus tenerrima*).

ance. It ripens in August, but is of no little value except for ornament, or, perhaps, for preserving.

ILL EFFECTS OF ROOT-COILING.

ATTENTION has again been directed to this evil by the failures of several Cypresses planted from four to seven years ago. The Monterey Cypress (*C. macrocarpa*) is said to die out quickly in every part of Australia within thirty miles of the coast; but there is some reason for believing that its early decease should not always be attributed to the locality. This species is but one of several which have died prematurely. The others that have been brought under our notice are *C. Goveniana*, *Lambertiana*, *horizontalis*, and *Ubcana*. Examination of the roots revealed the fact of death having in every instance been occasioned by root-coiling. It may be necessary to explain that the coiling of the roots is occasioned by growing the young plants in pots, in which condition the roots go round and round, and, unless care be taken when planting out to open them up and cause them to radiate from the centre, they continue the spiral course. It will be easily understood that when these cork-screw roots swell they form a solid rope; as each strand increases in diameter it presses on its neighbour, so that, in the end, the circulation of the sap is altogether stopped, and the death of the tree ensues. It is worth notice that this effect is not experienced in the case of all kinds of Conifers; some of them appear to have the faculty of throwing out roots from the collar of the plant, and of thus rendering it, in some measure, independent of the coiled roots. There have probably been more pot-grown specimens of *Pinus insignis* planted out than of any other tree, and yet hardly a complaint has ever reached us of losses of these by root-coiling. Many specimens of the choicer Pines, Deodars, and other Cedars, have been lost through this cause, so that it will be well for planters to note carefully the species which are liable to suffer and those which are not. The great lesson to be learnt is caution in buying. When selecting Conifers at a nursery do not choose the largest plants, but prefer those which have been the shortest time in pots and which are also making free and healthy growth. Not only is no time lost by making use of the youngest plants, but the ultimate stature of the tree will be far greater than it ever can be from a root-coiled subject.—*Australasian*.

ON TRANSPLANTING TREES AND SHRUBS.

BY LEWIS BAYNE.

DURING the last few years the writer has had considerable experience in this sort of work, having superintended the transplanting of a vast number of trees and shrubs at different seasons of the year, and he now begs respectfully to report the result of that experience. It may only be stated at the outset that the locus of the operations to be reported on is a few miles inland, and having a northern and western exposure.

1. This transplanting took place in the second week of April, 1868, and the lot then transplanted included two large evergreen Oaks (*Quercus Ilex*) about 15 feet high, with about the same spread of branches; eight English Yews, 7 feet high; a number of Norway Spruce of the same size, and three dozen common Laurels, 3 feet high. One of the Oaks lost all its leaves the first summer after removal, but immediately afterwards revived, while its neighbour died during the second summer, which, it may be observed, had been growing among stones, lime, and rubbish, and very little soil was attached to the roots, the roots themselves being inferior, with few fibres. Both these circumstances would, in a great measure, account for the failure. The remainder of the lot survived the operation, but with varying success—none of them making much progress the first two seasons. The Yews were least affected by the removal; the Laurels shed their leaves, but recovered the first season; and the Spruce, which almost stood still for a while, have shot up wonderfully since. The dry summers of 1868 and 1869 may account for their slow progress at first, although they were watered at planting and occasionally after. The soil, it should be mentioned, was a mixture of turf and loam about 2 feet deep, and the sub-soil was an old public road, properly loosened; the new position was moderately sheltered.

2. Lot 2 consisted of some four score Spruce and a few Oaks, which were transplanted on the 14th and 15th January, 1869; although the new position was within a hundred yards of the first lot, the other attendant circumstances differ considerably. The soil was a dry loam, well trenched-ploughed, but the position was more exposed, while the plants were removed from a well sheltered position. This, together with having to contend with two dry seasons, caused the death of about 5 per cent., while the survivors have hitherto made but slow progress.

3. On the 20th of March of the same year, a removal was made of a number of common Laurels, evergreen Oaks, and common Hollies, all from 3 to 5 feet high, from a shrubbery moderately sheltered, to a very exposed situation round a newly-built lodge. The new soil was a heavy loam resting on clay bottom, and which had been well trenched to a depth of 2½ feet before planting. All the Laurels and evergreen Oaks were pruned previous to planting, but not the Hollies; the ground being moist, no watering was thought necessary. The common Laurels lost a number of their leaves, and many of the shoots of the previous year's growth died, but they have all been growing well ever since the first year after planting, and now have the appearance of being in a healthy state. About one-half of the evergreen Oaks died down to the ground the first year, but have made good shoots from the stools. The Hollies all grew, but made small progress the first year; the slow growth in this instance may be accounted for by the dryness of the two following seasons, and the exposure of the situation.

4. The next transplantation numbered about twenty English Oaks, 9 feet high, and the same number of Norway Spruce and *Pinus austriaca* from 4 to 6 feet high, with a few Birch and other deciduous trees from 6 to 10 feet high. The new soil was a heavy loam resting on clay, and trenched 2 feet deep before planting. The English Oaks, Spruce, and Austrian Pines were removed from a young plantation and carted a distance of about two miles, and neither had been previously prepared for removal. The soil on which they grew was a poor loam resting on a cold clay, and the situation was very exposed, modified, of course, by the shelter of the other trees in the plantation. The new locality was also exposed. All the other plants were brought from a public nursery by rail, and afterwards carted about 4 miles. No pruning was done in either case. As regards the Oaks, the result was that one-fourth of them died the first year, and the remainder, although keeping in life, made little progress during the first two years. Only three of the Spruce and Pines died, but the others made slow growths the first year, especially the Spruce, the *Pinus austriaca* recovering, and feeling the removal less than the Spruce. The failure and slow growth of the Oaks may be accounted for by the want of pruning and preparing for removal, and the want of shelter. The want of shelter also damaged the Spruce; as a rule, they never make much progress for a year or two after removal, when taken from the shelter of a plantation; of the Birch and other plants, one-sixth died, a result not altogether unexpected, in consequence of their having no balls of earth adhering to their roots.

5. Again, on the 31st May and 1st June of the same year the removal was effected of a number of trees consisting of three *Pinus Cembra*, 9 to 10 feet high; four *Araneaia imbricata*, 5 to 6 feet high; three *Arbor-vitæ*, about 12 feet high; and a few Junipers, 5 to 6 feet high; all were growing within the shelter of and close to a high wall, and were only removed about 60 yards into the open ground, so as they might get hardened, and prepare roots for transplanting elsewhere. They were all properly watered when re-planted, and twice a week for some time after; when shifted they had good balls of earth adhering to their roots, and they have since grown well; indeed, in the course of making alterations the following year, the *Pinus Cembra* were again removed (on the 2nd June, 1870), and it was then found that they had made great root growth since their previous removal.

6. On the 28th of June, 1870, a transplantation was made of about fifty small variegated Hollies, some standard Hollies, and upright Yews,

Junipers, and *Mahonia aquifolia*, all having balls of earth with the exception of the Hollies and Mahonias, which, however, had first-class roots. All were re-planted in well-prepared soil, wherein bedding plants had been previously grown, and were copiously watered. Not one death took place in the whole lot, nor did any show signs of feeling the removal. From the above date to 7th July three were also removed, and carted a distance of three miles, a large quantity of Portugal Laurels, common Laurels, Hollies, and *Aucuba japonica*, and planted in a more exposed situation than from whence they were taken. All have grown, with the exception of four common Laurels, which died down to the ground, but have again thrown out shoots from the bottom. The other common Laurels lost many of their leaves the first season, but soon regained their foliage, and are now growing vigorously. The Portugal Laurels never lost their leaves, but made slow growths until the year 1872, but they are now thriving well. All were watered when planted, and occasionally afterwards.

7. The preparation for, and formation of, a new shrubbery during the spring of 1871, afforded an opportunity for transplanting on a large scale. Between the 14th April and 2nd May, there were removed and re-planted twenty English Yews from 7 to 10 feet high, and very bushy, about eighty Portugal Laurels from 3 to 8 feet high, about 150 common Laurels from 3 to 6 feet high, about twenty Hollies of the same size, one *Arbutus* about 6 feet high, and a few other plants. The result was that only two plants (Portugal Laurels) of the whole lot died, and these, it may be noted, had not good roots, nor soil adhering to them when planted. A few of the common Laurels lost some of their leaves, and many of the young top shoots died down from 6 to 9 inches from the top, but on being pruned commenced growing at once, and had made good growths by the autumn; probably had these been pruned when planted they would never have shown signs of feeling the removal. All were well watered when planted, and copiously watered and syringed with a hose from a heavy supply of water several times a week for some time after; success in this case may be attributed to the soil being previously well prepared, and the abundant waterings they received both to their roots and leaves. They had, besides, been carefully planted, and having only been removed about 100 yards from their original position, plenty of soil attached to their roots, which were not long exposed to the atmosphere. Between the 18th May and 3rd June, in the same shrubbery, there were re-planted a number of Portugal Laurels 4 to 6 feet high, and very bushy, English and Irish Yews 9 feet high, *Arbutus* 7 feet high, and *Aucuba japonica* 3 feet high; all underwent the same treatment as those above alluded to, and all have grown well. In connection with this it may be mentioned, that on some of those (re-planted on the 14th to 18th April) being again removed, from the 4th to 12th September, they were found to have made good root growth; on this occasion they were also well watered. The Laurels were not injuriously affected by the change, but two of the English Yews faded and drooped a little for some time after planting.

8. On the 4th and 5th December of the same year (1871), a change of place was tried with two *Cedrus Deodara* about 18 feet high, and one evergreen Oak about the same height. The soil was a cold clay, with which was mixed on transplantation a fair quantity of good black loam. The *Cedrus Deodara* both look as well as when they were planted; but the evergreen Oak died at once, never having shown any signs of life. The failure of the Oak was perhaps attributable to its want of roots. Previous to removal it had been growing on a cold wet clay sub-soil, and when dug up for transplantation it was found that such of the roots as had penetrated the clay under the surface soil were entirely rotten and full of water. It may also be mentioned, that although the tree had stood for thirty years in the same place, its roots had only spread to about 4 feet from the trunk and gone about 18 inches deep.

9. Another removal was made within the enclosure immediately above referred to, during the last week of January, 1873, when about fifty common Laurels 3 to 6 feet high, and about eighty Scotch Firs 4 to 6 feet high, were transplanted. The ground was previously well trenched, and there were added a few loads of good soil. Only two or three of the whole lot died, but many of the Scotch Firs have made little growth, which is attributable, probably, to the cold soil and the effects of the very wet season on such ground. Again, between the middle to the end of March there were removed from the same plantation about 300 Scotch Firs, similar to those removed in January, but to a more exposed and drier position, and much better soil, which was well trenched 2 feet deep to receive them. Of the whole number only five have died, some made good shoots, while others made very small ones, which might have arisen from the latter not having had such good roots or such large balls of earth when removed. In this case the wet season has been favourable to the growth of the trees, as the soil, being of a dry loamy nature, did not hold the same as the clay in the previous case.

10. On the 29th March, 1872, a Yew hedge about 5 feet high was planted, containing two dozen plants, of these only five are now living, all the others having shown signs of perishing immediately after planting. The reason of the failure is easily understood, however. The plants were got from a public nursery, where they had been planted and grown as a hedge for a number of years, never having been removed, but regularly switched, so as to form an upright fence. They were, of course, growing close together, and had no room to make good roots. In fact, the roots were interwoven with each other, and it was consequently impossible to secure a good ball of earth with each plant. Besides, they were not considered nor sold as first-class plants, but at a cheap rate, and were purchased and tried merely as an experiment, as to the success of which no very sanguine hopes were entertained, more particularly as they were planted in the shade of, and partly under, a very old and large English

Yew, whose roots extended a long way and appropriated all the moisture. At the end of said hedge, however, a week previously, five English Yews about 7 feet high, which had been removed from a neighbouring plantation, were planted, and all have grown and appear healthy. This shows the advantage of good balls of earth adhering to the plants, and the keeping the roots only a short time exposed to the atmosphere.

11. It has been ascertained that transplantation does not always check the growth of a tree, but, on the contrary, benefits it in no small degree. In proof of this the following may be noted:—A group of *Wellingtonia gigantea*, from 6 to 10 feet high, growing in the pleasure-grounds, were, with one exception, found to be in a far more prosperous condition. The exception, which had over-topped the others by several feet, was growing on the site of an old sunk fence, levelled and filled up, the ground being loose, and, as it were, prepared before planting. Its less fortunate neighbours had clay for a sub-soil, to which their roots had penetrated, and on the 23rd and 24th September, 1870, an effort was made to invigorate them. The trees were accordingly dug up, a quantity of clay all round and under their base removed, and replaced with good soil, mixing the clay and soil to some extent, and placing brickbats, &c., in the bottom for drainage. In their new position they were raised about a foot above the natural level of the surrounding ground. The trees were well watered when re-planted, and are all now thriving again. A *Wellingtonia gigantea*, about 12 feet high, had to be removed out of the line of a proposed carriage-drive, and it was carried to a new situation on 3rd October, 1870. The result was equally successful. In the year 1871 it produced cones for the first time, and next year the cones upon it were more numerous. At the same time, a difficult removal (from a distance of several miles) was effected of a *Cedrus Deodara*, 15 feet high, with large spreading branches, and a considerable number of Portugal Laurels, all of which, notwithstanding various disadvantages, in the shape of rough usage, exposed position, &c., have stood the change, and are thriving.

In the foregoing paper the writer has noted down what has come within his own personal observation only, and it remains for him now to make a few remarks, suggested by his own experience, as to the trees best fitted for transplantation, the season of the year best suited for the work, and the treatment of the tree before and after transplantation—although in actual practice it is not always possible to carry out one's ideas. The first thing to be done is to select a suitable plant for the object in view. It should be well grown, and have a fair supply of branches; and it ought, if possible, to be taken from a more exposed and less favourable situation than the one to which it is to be removed. To prepare it for removal, a trench should be dug round it in the autumn or spring of the year previous to removal, about 2 feet wide and deep enough to get well under the roots, the distance from the stem varying (3 or more feet), according to the size of the tree, and re-filled with good loam or a mixture of decayed turf or leaf mould. Judicious pruning of the wider-spread branches should also be had recourse to, especially if the tree or shrub is of a straggling habit of growth; generally speaking, those having straggling branches have long running roots, and which, on removal, are, to a certain extent, necessarily shortened. The more there is cut off the roots, accordingly, the more pruning is required so as to balance the tree, as well as to limit the demand for nourishment, the means of supplying which has been more or less reduced by the cutting of the roots. Pruning is most especially necessary in the case of large forest trees, which, as a rule, have less fibrous and more spread roots than shrubs. The place to which the removal is to be made should invariably be prepared and loosened by trenching or digging, and well drained; and if the soil be poor or a stiff clay, a mixture of good loam or decayed turf and leaf mould, would go far to secure the success of the operation and after benefit of the plants. It is also very advisable to have the new situation raised a little above the surrounding level of the ground, so that the roots may be dry and warm, and have an opportunity of spreading in search of nourishment in the surface soil. They should be watered abundantly when re-planted, and afterwards if necessary. It should be kept in view that it is all important to preserve the roots from accident in the act of transportation. Further, they ought, as far as possible, to be protected from the sun and wind, and action of the atmosphere, by the use of matting or otherwise. With reference to the size of trees to be transplanted, it may be observed, that although large trees, say upwards of 18 feet high, may be removed and re-planted, it is seldom advisable to do so. There is always greater risk of the work not being performed successfully while (assuming that they survive transplantation) they often continue long at a standstill without making visible progress, and have a sickly appearance for years to come. This would not be the case with trees of smaller size. They would take to the new soil rapidly, look lively, and, ere long, outstrip their larger neighbours transplanted at the same time as themselves. Besides this, the trouble and cost of removing the smaller trees will be much less than in case of the large; while, with the latter the risk of total failures is proportionally greater. As to the most favourable time for the planting of deciduous trees and shrubs, the writer would recommend from the middle of October (just when they begin to shed their leaves) to the last week in November; and from the middle of February till the last week in March, when the trees begin to break bud. The operation may, however, be performed successfully from October to March inclusive, should the weather remain mild and open. Evergreens may be safely removed all the year round, but the preferable time is from the middle of September to the middle of October. Autumn planting saves the expense of watering, which cannot safely be dispensed with in summer planting; and this expense becomes considerable when the plants are numerous and of large size, and the water a distance to carry. Other good times for removing

evergreens are the beginning of April, and from the last week in May till the second week in June, but they then require copious waterings to ensure their success. In the case of lawns and other dressed ground, mid-summer transplanting has the advantage of not cutting up and destroying the ground in the performance of the operations, the ground at that time being generally firmer than in the months of September and October. It will be obvious that while the ground is firm the work of removal must be more easily performed. After transplanting, it is necessary that the trees should be well secured against prevailing winds. To effect this, various methods are employed; one of which is by driving three stakes into the ground at angles, and tying or mooring the trees with strand and cable wire, or pitch cord, using hay or matting, or other soft substance, to keep the rope from destroying the bark. This, in the writer's opinion, is the most efficient mode of protecting large trees against wind. Trees of smaller size may be secured by driving two cross stakes well into the ground at proper distances from the stem, so as not to injure the roots, and then tying the plants between them. Another method is by stakes, and cross rails 2 or 3 feet from the ground, according to circumstances; or close upon the roots under the ground, when the plants have large balls. This last way avoids the unseemly appearance of the stakes and rails in parks and ornamental grounds. Almost nothing requires to be said about the methods of removing the trees from the old to the new situation, as they vary according to the peculiar circumstances of each case, the size of the tree, the nature of the road, the distance to be carried, &c. It may be mentioned, however, that all the removals spoken of in this paper were effected by means of a large low four-wheeled truck or wagon, without sides, for the heavy trees, and one of smaller size for the lighter ones. To the former could be attached two or more horses, and the latter was available for horses or workmen merely. The trees were raised upon these by means of planks and rollers, and in the case of the smaller plants by strong hand-barrows. These were found quite sufficient for the purpose.—*Highland Society's Transactions.*

THE OLD SURPRISE.

Now what hath entered my loved woods,
And touched their green with sudden change?
What is this last of Nature's moods
That makes the roadsides look so strange?

Who blanched my Thistle's blushing face,
And gave the winds her silver hair?
Set Golden-rod within her place,
And scattered Asters everywhere?

Who splashed with red the Sumach hedge—
The Sassafraz with purple stain;
Gave Ivy-leaves a ruby edge,
And painted all their stems again?

Lo! the change reaches high and wide,
Hath toned the sky to softer blue;
Hath crept along the river side,
And trod the valleys through and through;

Discoloured every Hazel copse,
And stricken all the pasture lands;
Flung veils across the mountain tops,
And bound their feet with yellow bands.

Is, then, September come so soon?
Full time doth summer ne'er abide?
While yet it seems but summer's noon,
We're floating down the autumn tide.

Mahogany Trees in India.—It is Dr. King's opinion that no difficulty is likely to be found in "planting Mahogany on a large scale in districts of Lower Bengal." Of this cultivation Dr. King says:—"The Mahogany plants were raised from seeds received from Honduras and Jamaica. There are, as Government is aware, a good many old Mahogany trees about Calcutta. These, however, rarely yield seed, and our supplies are mostly derived from the West Indies and Honduras. I am strongly of opinion that, if it can be got in no other way, it would be worth while to hire a man specially to collect and transmit seed to India. It has been abundantly proved that the tree will thrive in most parts of Bengal, and that the Indian-grown timber is valuable. There are fine trees of it also in the gardens at Saharunpore and Madras, and I have no doubt that it will grow admirably in almost any part of India in situations free from frost, and where a little moisture can be secured in very dry weather. I see no difficulty in getting up plantations of it on a large scale and at a moderate cost. The Mahoganies here which were spared by the Cyclone are by far the finest trees of any sort the garden contains. They were planted about eighty years ago, and at present, at a height of 6 feet from the ground, their girth runs from 8 to 11½ feet. Now the average girth of Teak at ninety years of age is only about 6½ feet and that of Sál is less."

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE BRASSICA TRIBE IN LONDON MARKET GARDENS.

THE CABBAGE.—What is called the Enfield Cabbage is that which is used in the market-gardens about London. It is one of the oldest in cultivation and one of the best, and as growers of it generally save their own seed, they take particular care that their plants of it are not crossed with other sorts. The sowing for the principal crop of this Cabbage is generally made on St. James's Day, the 25th of July, or some time between that and the middle of August, and if the sowing be made on poor ground so much the better, as in that case the plants come up stocky and hardy, and stand the winter well, whereas, if made on rich ground, a soft rank growth is produced, which is much more easily injured. This sowing is, as a rule, made in 4 feet wide beds, a width found to be convenient for weeding and hoeing amongst the plants. By the time the latter are sufficiently strong to be transplanted the Potato or Onion ground is ready for the reception of a first batch of them, and on that cleared of Celery, French Beans, or Vegetable Marrows, another plantation is generally made. Every empty space under fruit trees or elsewhere is also planted with Cabbages. In planting, the ground is lined off into rows, 35 inches apart, and in these the plants are put in 15 inches asunder. Between every two rows first planted another is now put in with less care, thus making the plants stand 15 inches apart each way. Early in spring every alternate line of plants, and also every other plant in the lines or rows left, are lifted and sold as Coleworts, *i.e.*, young open Cabbages, a state in which they are preferred by many to such as are hearted. This allows the permanent crop plenty of room to come to maturity. With a view to subsequent plantations, which are made all through the winter wherever ground is vacant, the young plants in seed-beds are removed and pricked out into others a little further apart, in order to keep them in good condition for planting out as long as possible. In this way, indeed, many of the plants are kept till spring, when they are transplanted to succeed those planted out in autumn, and to come in before the produce of the spring sowings, made late in February or early in March, to furnish Cabbages from June to August. The plants from this sowing are put out in rows 2 or 2½ feet apart, and in the intervening spaces are put lines of Lettuces, a plant of which is also set between every Cabbage in the row. If thought necessary, another sowing is made in the end of March, or in April; and sometimes a bed is sown in May, when what are called Rosette Coleworts are sown. As the latter are, however, chiefly grown for late autumn and winter supplies, Cabbages are seldom sown after March. Moreover, when Peas, French Beans, and Vegetable Marrows are in, there is little demand for Cabbages. Red Cabbages are sown in March or on St. James's Day, and the plants are put out in rows from 3½ to 4 feet apart, and the plants stand about 3 feet asunder in the rows. As this crop stands until the heads are large and solid, a piece of rich land is devoted to it, and intercropped with Potatoes, ordinary Cabbages, Lettuces, French Beans, or other vegetables of that kind. The produce of the July sowing is generally considered better than that of spring.

COLEWORTS.—These are simply unhearted Cabbages, pulled for market when about half-grown; any small variety of Cabbage may, therefore, be grown for this purpose. Some kinds, however, better deserve the name of Coleworts than others, and these are often left until they heart. Among them are the Rosette, a valuable kind, usually sown in May for use between October and Christmas; and Cock's Hardy Green Colewort, a desirable sort for winter use, as it is hardier than the Rosette. Another sort, called Blue Colewort, is largely grown by some market gardeners; but it is a kind which is

apt to "run," and is generally grown for the November crop. For spring Coleworts, only the thinnings of the Fulham Cabbage are used. The Rosette is, perhaps, the greatest favourite in the market, its beautiful white heads, when bunched, having an attractive appearance; but, as regards quality, nobody would eat the Rosette who could get Cock's Hardy Green—*i.e.*, if they were acquainted with the respective flavours of the two varieties. A sowing of the Rosette is usually made in May, in beds in an open piece of ground, and, when up, the young plants are thinned with small hoes. The strongest plants are first selected for transplanting, and are put in chiefly as catch crops between other vegetables. As soon as fruit bushes have been cleared of their crops two rows of Coleworts are planted between them; they are also planted under fruit trees, no matter how large the trees may be, and also between rows of Moss Roses. The space between Celery ridges is likewise generally planted with Coleworts, as is also that between Asparagus ridges, the edges of which, too, are often cropped with Coleworts. Between the rows of French and Runner Beans, and late Savoys, this Colewort is likewise planted, and, in fact, like Lettuces, it is planted in every empty space where there is a probability of its growing to a useful size. Whole fields, too, are sometimes cropped with it, and are cleared in good time for winter Radishes. Cock's Hardy Green Colewort more resembles an ordinary Cabbage than the Rosette, and, being hardier, is sown a month or six weeks later, so as to form a succession to that sort.

BROCCOLI.—The chief supplies of white Broccoli brought to the London markets between November and April are grown in the south and west of England, but principally about Portsmouth and Penzance, in Cornwall. From these sources Broccoli is obtained in large quantities, and of excellent quality. In the market gardens about London the purple Sprouting, the Walcheren, Snow's Winter White, and Cock's Late White, are the kinds chiefly grown. The first sowing of Sprouting Broccoli is usually made in April on a rich piece of ground, either in beds or broadcast. When the young plants appear above ground they are first hand-weeded, and afterwards thinned by means of narrow hoes. As soon as they are strong enough for transplanting they are planted in rows about two feet apart under fruit trees, or in some other shady situation, this crop, owing to its succeeding tolerably well in shade, seldom being afforded an open quarter. When planted between rows of fruit bushes, two lines are inserted in the intervals between every two rows; but if two drills of Potatoes occupy this space, then only one line of Broccoli is planted, and that between the two drills of Potatoes. Should the whole space under an orchard be planted with Potatoes in drills about 2½ feet apart, in that case, as soon as these are earthed up, Broccoli is planted between the rows without the soil being loosened. The Potatoes ripen before the Broccoli can injure them much, and when the Potatoes are removed the Broccoli has the whole space to itself. The trees lose their leaves in October; therefore the Broccoli, having the benefit of increased light, becomes invigorated, and during that month and November begins to afford a good supply of sprouts, which are not all gathered at once, even from the same plant, but at intervals, as they become fit for use. The soil for Broccoli should be rich, otherwise the plants are liable to club, and if the ground be too dry, premature sprouting, before there is a market for the produce, is the result. Another sowing is generally made in the middle of May; indeed, from this sowing the principal winter crop is obtained, and more plants are raised than are absolutely required, as all clubbed and weakly ones are discarded at planting time. Sometimes the time of year, when ground will be vacant, materially influences the season for sowing; for it is an important matter to have the young plants in a healthy stocky condition at planting time. If sown, therefore, so early as to have to be kept in the seed-bed until they have become "drawn," they sprout sooner than required, and before there is any demand for them. For late sprouts a sowing is made about the end of June or first fortnight in July, the produce of the first sowing being transplanted. From this sowing sprouts will be obtained in the following spring in March and April, and after they are removed the ground will be in good condition for receiving Wallflowers. WILLIAM FALCONER.

NOTES OF THE WEEK.

— A NEW garden has been formed at St. Petersburg, to be devoted to illustrate how native plants may be effectually used in garden embellishment. It would be no very difficult work to form a charming garden with our own wild flowers, and shrubs, and trees, and we commend the effort to those who wish to establish a novel feature in their garden.

— At the Aberdeen Fungi show, a meeting of botanists was held, when it was agreed to form a Scottish Cryptogamic Society, which, by an annual exhibition held in the larger cities by rotation, and by other means, would endeavour to promote a more complete knowledge of Cryptogamic plants. It is intended to hold the exhibition next year at Perth.

— A HEAVY storm has passed over Belgium, clearing hardy fruit trees in many instances of their crops, and doing other damage. It has been observed, however, that some sorts of fruit have withstood the storm better than others, and to ascertain what varieties do and what do not retain their fruit during stormy weather may be a matter worthy of more attention than it has hitherto received.

— In a paper "On the Periodicity of the Rainfall in the United States in Relation to the Periodicity of the Solar Spots," by Prof. John Brocklesby, the author concludes from his investigations, that there is a connection existing between rainfalls and variations in the sun-spot area; the rainfall rising above the mean when the sun-spot area is in excess and falling below it when it is deficient.

— In "Notes on Tree Growth," read by Prof. Asa Gray, before the American Association for the Advancement of Science, the author says, whether the trunk of a tree increases in length, in the parts once formed, is still an open question in the popular mind. From careful observations made by Prof. Gray and many others, the conclusion is, that the trunks of trees do not grow in length, in that sense.

— THE consumption of Osiers for various purposes, in England especially, is very great. Besides her own production, this country, *Nature* informs us, imports more than 5,000 tons, valued at about £40,000. About 300 varieties of Osiers are known, the most important beds being situated near Nottingham; the home produce being insufficient to meet the demands, great attention is being paid to the cultivation of beds in Australia, and a considerable quantity is yearly produced in that country.

— In a paper "On the Distribution of American Woodlands," read by Prof. Wm. H. Brewer, of New Haven, before the American Association for the Advancement of Science, the author stated that the flora of the United States is believed to contain over 800 woody species, and over 300 trees. Of these trees, about 250 species are somewhere tolerably abundant; about 120 species grow to a fairly large size; twenty attain the height of 100 feet; twelve a height sometimes of over 200 feet, and a few—perhaps five or six—a height of 300 feet.

— THE most elegant plant now in the flower-gardens of the London district is the old and well-known *Acacia lophantha*, a plant for which of late years a new use has been found. It is very effectively used in adding a Fern-like grace to flower-beds, and sometimes in masses, with "carpet" plants beneath. At Heckfield, Mr. Wildsmith uses it as a vase plant, and with a charming effect in softening the mass of *Pelargoniums* from which each plant springs; the plants thus used are seedlings of the current year. It is also one of the most useful of window plants, showing its delicate frond-like leaves throughout the winter in the dry air of any living room.

— THE first Fungus exhibition held in Scotland was opened the other day in Aberdeen. The idea of the exhibition was first suggested by the Rev. Mr. Ferguson, of New Pitsligo, in the *Scottish Naturalist* for April. The suggestion was readily taken up by Fungologists and men of science, and the result was an exhibition which those entitled to speak with authority say was never equalled in this country. The specimens numbered about 7,000. Almost every county in Scotland made large contributions, while England and Wales sent a number of exhibits. In fact, almost every Fungologist in Britain contributed specimens.

— SOME of our readers may like to know that on Wednesday next an exhibition of edible and poisonous Fungi will be held at South Kensington, where prizes amounting to £28 will be competed for in the following classes, viz.:—Class 1. Collection of Fungi arranged according to their botanical affinities. Neat arrangement and correct nomenclature will be taken into account in awarding the prizes. The edible and poisonous species are to be so marked on their respective labels; the edible species being named on white labels, the poisonous on red labels, the rest on yellow labels. Prizes £5, £3, £2. Class 2. Collection of Edible Fungi. These should be shown, when possible, in juxtaposition with specimens of similar but noxious species. Prizes £3, £2, £1. Class 3. Collection of New or

Rare Fungi. Prizes £3, £2, £1. Class 4. Cultivated Edible Fungi. This class is intended for species likely to be useful as esculents, but which are not now known in the cultivated state. Prizes £3, £2, £1.

— THE common Hemp is used with very good results in the flower gardens round London this year. It is particularly effective at Battersea, where it attains a height of more than 10 feet.

— At a late meeting of the Paris Academy of Sciences, Dr. Hofmann announced that his two students, MM. Tiemann and Haarmann, who had obtained vanilline (the aromatic principle of the Vanilla Bean) from Pine sap, propose to manufacture this substance on a large scale. The sap of a tree of medium height gives vanilline to the value of 100 francs, and the wood is not injured by the extraction of the sap. This will be the second vegetable product manufactured by purely chemical methods.

— THE fine days we have recently enjoyed have so checked the work of autumn in the London parks that the flower-gardens therein are now full of beauty. Our notices this year have, for the most part, concerned Hyde Park; but to Battersea, as usual, the palm must be given, and Victoria Park is also very attractive. It is a most favourable time then for visiting these gardens and making notes of recent introductions and arrangements. We may add that the Crystal Palace gardens are by many thought to be better and brighter than ever this year so far as bedding-out is concerned. We have recently alluded to the manner in which these once noble gardens have been violated by the builder.

— THE current number of the *Botanical Magazine* contains coloured plates of the following new and rare plants, viz., *Tacca artocarpifolia*, an herbaceous stove plant closely resembling *T. pinnatifida*, and differing from the commonly cultivated *T. cristata*, more particularly in having pinnate foliage. *Pogonia discolor*, a charming addition to variegated Orchids, having deep green leaves marked with radiating orange-yellow lines, and closely set with yellow hairs. *Lilium (avenaceum) maculatum*, a showy orange-yellow species, spotted with brown. *Scorzonera undulata*, a rosy-flowered composite of slender habit. *Citrus Aurantium* var *japonicum*, the Kumquat figured and described in *THE GARDEN*, p. 501, Vol. V.

— A NOVEL and altogether excellent idea, says the *Gardeners' Record*, was started by the committee of the recent International Show, at Belfast, when they offered prizes for the best cropped Vineries in the province of Ulster, and we trust the example thus set will be imitated by the Royal Horticultural and other societies throughout the country. Competition of that class would tend to do more for the improved cultivation of the Vine than the most lucrative prizes that could be offered at a flower or fruit show, and would be productive of more real benefit to the owners of gardens. We trust the committee of the Royal Horticultural Society will give the matter some consideration when arranging their schedule for next year, and that liberal prizes will be offered for the best house of Grapes in the province of Leinster, if they do not deem it judicious to open the competition to the whole of Ireland.

— MR. MEEHAN has been at work again on the origin of species. After adducing many instances in support of the theory that new forms are often generated by "leaps," Mr. Meehan concludes with the following propositions:—1. Morphological changes in individual plants are not always by gradual modifications. 2. Variations from specific forms follow the same law. 3. Variations are often sudden and also of such decided character as to seem generic. 4. These sudden formations perpetuate themselves similarly in all respects to forms springing from gradual modifications. 5. Variations of similar character occur in widely separated localities. 6. Variations occur in communities of plants simultaneously by causes affecting nutrition, and perhaps by other causes. Mr. Meehan argues from these premises that new and widely distinct species may be suddenly evolved from pre-existing forms without the intervention of connecting links.

— THE New Zealand Flax (*Phormium tenax*) is being successfully cultivated in St. Helena. Hitherto no very great attention has been paid to the cultivation of this plant, and the natural supplies obtained in New Zealand are insufficient for the demands of commerce. This is not to be regretted, for careful cultivation cannot fail to improve the fibre, and the best kinds alone will be worth the trouble of proper rearing. Steps are, however, being taken to cultivate this plant in New Zealand and in other countries. In the Azores, at St. Helena, in Algiers, and the South of France, it thrives well, and has been easily naturalised. The fibre is principally used for making ropes and paper, for the caulking of vessels, for stuffing mattresses, and for coarse textile fabrics. We should like to learn the value of fibre grown in the south of Ireland and England as compared with that grown in warmer countries. The plant grows well in Cork and Devon, either in or out of the water.

GUERNSEY AND BELLADONNA LILIES.

AMONG the plants popularly known as Lilies there are few more beautiful than those we here figure. The Belladonna Lily (*Amaryllis Belladonna*), is a native of the Cape of Good Hope, and has long been an inmate of our gardens, although its culture has never been so general as it deserves. Planted on the warm narrow borders in front of plant houses or pits, it forms a beautiful object late in the autumn; or, plants of this



The Belladonna Lily.

and *Helleborus niger*, the Christmas Rose, may be planted alternately, and then the latter will continue the supply of bloom into December or January. A deep rich moist border suits it best, and in suitable situations the flower-scapes are often 18 inches in height, and bear as many as eight or nine blooms each. The colour of the flower is white, delicately shaded with soft rose, making the plant very beautiful either as a border flower or for drawing-room vases. The Guernsey Lily (*Nerine sarniensis*) is rather more tender, but does well treated as a pot plant; and, as it flowers freely during September and October, it comes in very usefully for conservatory and greenhouse decoration, or even for the ornamentation of



The Guernsey Lily.

windows and rooms. Bulbs of both plants are largely imported in August, and flower in two or three weeks after they are potted. The bulbs only cost a few pence each, and can be selected when the flower-spikes are showing, so that their flowering is reduced to an actual certainty. Pot them in any light rich soil, and place them in a cold frame or pit until their flowers expand, after which they may be removed indoors to bloom. Thus treated, they seldom fail, and both plants deserve to be grown in quantity in every collection where hardy or half-hardy flowering bulbs are appreciated. B.

WINTER AND SPRING FLOWERS IN COVENT GARDEN.

A WONDERFUL place is Covent Garden at all times of the year, but more especially during the winter and spring months. Early in December Christmas Roses—so named from the resemblance their flowers have to the wild Roses of our hedges—begin to make their appearance, both in the shape of cut flowers and in pots. Then comes the winter Aconite, which is sold in little tufts wrapped in damp Moss; but not so much so as to conceal its fresh green leaves and bright yellow flowers. Next appear Snowdrops done up in a similar manner. These are succeeded by Crocuses, Hyacinths, Tulips, Daffodils, Squills, and hosts of similar early flowering bulbous plants, either lifted from the open ground just as they come into bloom, or in the form of cut flowers, and the fine condition to which they are brought, especially those in pots, is quite surprising. They are potted in October and November, and are buried in ashes or cocoa-nut fibre for some two months, so as to get the roots in advance of the tops, when they are gradually inured to light, and forced into flower slowly, so as to induce them to produce good fresh green leaves along with the blooms. As soon as they show their flower-buds extra ventilation is given, and the plants being near the glass, dwarf sturdy growth is thus obtained. In the case of Van Thol Tulips, the kind usually grown for market, they are thickly packed in shallow boxes, in which they are left until they come into flower, when they are potted four and five together in 6-inch pots. In the centre of each pot is sometimes put a small Fern, a graceful combination which, when the Tulips are in bloom, is very effective. Perhaps the greatest favourite of all, however, is the Lily of the Valley, which when loaded with little "green-tipped lamps of white," is undeniably a queen among flowers. This is treated in the same manner as the plants just named. It should, however, be potted as early as August or September; indeed, the earlier it is potted the better, so as to have good established plants before winter sets in. At potting time roots with plump solid crowns are selected, and in as large masses as can be got into the pots. Should they happen to bloom irregularly, as soon as this can be perceived, they are turned out of the pots, divided, and equalised, the weakly roots being potted together and utilised for cut bloom. Scarcely has the market been made gay by means of bulbous plants, than bunches of double-flowering Daisies, common wood Primroses, and garden Polyanthus, make their appearance, together with Anemones, Hearts-ease, Anubietias, Violets, the early white Arabis, dwarf Phloxes, Wallflowers, and multitudes of other early blooming plants, all welcome indications that "summer is coming, and that cold winter is away." These plants, which have been lifted with balls of earth attached to their roots, are packed closely together in shallow boxes, and are sold singly or by the boxful, as may be required. For such roots as those of Canterbury Bells, Hollyhocks, Larkspurs, Monkshood, Paeonies, and similar hardy herbaceous plants, there is also a brisk trade, as well as for Stocks, Asters, and Balsams, young plants of which are exposed for sale in flat boxes in abundance. Sweet Peas, Nasturtiums, and Tropæolums, are sold when about 2 or 3 inches high, in 6-inch pots. Among plants suitable for wall decoration, the Virginian Creeper is a great favourite, as are also Jessamines and Irish Ivies, all plants that do well in towns. Foremost among window plants stands the Creeping Jenny, a favourite with everybody, and though a native plant, grown largely in gardens to supply the London trade. For fairy Roses and for Periwinkles there is also a large demand, as well as for Ferns, of which basketsful stand about everywhere, fresh and green, reminding one of the sweet spots far away from noise and bustle, from which they have been rudely torn. Go, too, to Covent Garden at any time, and it will be found to contain evergreens in profusion, in pots, more especially Aucubas, or Spotted-leaved Laurel, as it is sometimes called, a shrub much sought after for suburban gardens, and one which withstands smoke better than almost any other. Q.

A Japanese Nursery.—Surrounding the temple at Asacksa are extensive grounds, in which are included various shows. The most interesting part to me was that portion occupied by a florist's establishment. Here you find everything kept in the neatest order. The plants are arranged on elevated stages, shaded with rolls of fine Bamboo laced together, forming open mats, which can be rolled up when desired. They are much superior to a framework of lath, sometimes used by us for sheltering plants from the sun. The principal stock of plants consists of those most suited to Japanese tastes, viz., dwarfed Pines and Retinosporas, Sago Palms, variegated Podocarpus, Aucubas, Selaginellas, &c., many of which are sold at what we would consider very high prices. I was surprised to find growing here three distinct varieties of Verbenas, which I was not aware had

been introduced; also *Jasminum grandiflorum*, and a species of *Franciscea*. The grounds contained several species of trees unknown to me, which I would have purchased if I could have obtained small specimens. A pond full of scarlet *Nelumbiums*, the flowers standing on tall foot-stalks above the foliage, like immense Tulips, had a very fine effect. The Japanese gardeners cultivate a number of varieties of them having double flowers, and with various marking and shades of colour, some of which I hope to be fortunate enough to send home alive. The scarlet *Clerodendron* seemed to be a favourite, and large plants of it, grown in ornamental porcelain pots, made a fine show. The Japanese do not entertain our objections to growing plants in glazed pots; all their fine specimens are grown in them, and I certainly have not been able to see that they do not thrive equally as well as in any other kind.—T. HOGG.

Wood Sorrels (*Oxalis*).—We learn from Mr. Tyerman that the beautiful little *Oxalis lobata* is now flowering finely in his garden, in Cornwall. The bright yellow flowers of *O. lobata*, which are large compared with the leaves and short stature of the whole plant, which is barely a couple of inches high, make a really pretty and pleasing feature, such as is sure to arrest the attention of the most casual observer. When planted in masses, the ground looks studded with golden stars. Mr. Tyerman suggests that this very interesting genus of plants would do much to make our gardens more interesting at this season of the year, since they are all of the easiest possible cultivation, and in dry soils perfectly hardy, or at the utmost a slight protection from heavy rains during the dormant season would make them quite secure. *O. elegans* is, as its name implies, beautifully elegant; the leaves, which are of great substance and smooth, grow 3 to 4 inches high, and the flowers rise 6 or 8 inches above the leaves, of a pleasing rich purple-lake, with dark centre. *O. Deppei* is well known, its reddish flowers being produced well above the neat foliage for several months in succession, and like the beautiful rose-pink *O. Bowiei*, would make excellent variety in the modern flower garden. *O. floribunda*, and its numerous varieties, are hardy perennials, and are almost perpetual-flowering. Where the soil and situation are at all genial, all the summer-flowering kinds will prove much more satisfactory when grown in the open borders "than as they usually are, cramped in pots;" even that weedy species, *O. lacteiflora*, is much more interesting in the open ground.—*Florist*. [There are a good many other kinds quite as beautiful as those above-named, and most precious for cultivation, especially in warm soils. The yellow *O. cernua* is as pretty growing wild as it does in Italy, as the Cowslip is where it grows well in our meadows. There is a beautiful purple-crimson kind, also naturalised in the gardens and lawns in Italy. In this country Messrs. E. G. Henderson, of the Wellington Nurseries, have the best collection of these neglected plants we know of. They are plants, however, the beauty of which cannot be fully seen when they grow in pots and small patches. This will be understood by those who have seen *O. Bowiei* in bloom in the botanic garden at Chelsea, or in Pince's Nursery at Exeter. The distant effect of a crowd of the flowers is inexpressibly charming.]

Covent Garden Market.—Writing of the insufficiency of Covent Garden Market as it now stands, the *Telegraph* asks who is the noble landlord that has been so often memorialised, petitioned, and beset with remonstrance? The noble landlord is his Grace the Duke of Bedford; and he, by a nod of his gracious head, by a stroke of his gracious pen, would set on foot an undertaking which, in a few months, would transform Covent Garden Market into a public edifice not only commodious, but splendid. He might remember that it was the passionate admiration of his ancestor, the Bedford of Charles I.'s time, for Palladian architecture, which led him on his return from Italy, to erect on the site of the old Covent Garden a series of edifices designed to rival the Piazza del Signori at Vicenza. He might remember that he, the actual head of the illustrious house of Russell, is the possessor of well-nigh boundless wealth; that he is the Lord Paramount, not only of Woburn's pleasant shades, and the wide expanse of the Bedford level, but of scores of streets and squares—of whole districts—in London town. He might remember, that among his vassals and dependents he is a great prince; that with them his word is law; and that the opportunity is before him, not only of regenerating the huge mass of brick and mortar which he owns—not only of earning some personal celebrity for himself by rebuilding Bloomsbury and Covent Garden, as the Marquises of Westminster have built Piccadilly and Belgravia—but of still further swelling the contents of his prodigious coffers, through the enhanced value of his property. Of all these things, and of many more, we might remind the Duke of Bedford, if we only knew where his Grace was to be found. Where is he? Who will organise an expedition to the South Pole in quest of the Duke of Bedford? The House of Lords is eager for his utterances. Market gardeners, seedsmen, and florists stand ready, waiting with rich offerings, like the old tributaries of the Great Mogul, with their gold mohurs in their hands. Is he the

Mogul, or the Grand Lama of Thibet, or the Veiled Prophet of Khorassan? Or is he an abstraction, a myth, an impalpable idea—a mere ducal phantom and chimera? If his Grace could only be "got at"—if the prayers of his vassals could only be made audible to him, if he could only be brought to the wholesome conviction that property has its duties as well as its rights—he might easily, expeditiously, and without risking one shilling of his enormous revenues, convert Covent Garden into a palace. At present it bears a disagreeable resemblance to a series of dust-bins and lay-stalls, littered pell-mell about the yard of a gaol.

The Royal Horticultural Society's First-class Certificates.—At the last floral meeting held at South Kensington, Mr. Fraser gave notice that he should propose, at the next meeting, on October 7th, that something be done to give First-class Certificates more weight than they hitherto have had, more especially in the case of plants that gain a First-class Certificate by a unanimous vote, and that are of superior merit. That some alteration is needed, there cannot be a doubt, and as the subject is an important one, I trust there may be a full meeting, and one at which a decision, satisfactory to all parties, may be arrived at.—EDWARD BENNETT, *Hatfield, Herts.*

Vegetables and Salads in the Paris Market Gardens.—The ground cultivated by market gardeners, in and around Paris, amounts in all to more than 3,000 acres, and the business gives employment to 9,000 persons and 1,700 horses, these being used for pumping water as well as for transport. It is said that 360,000 glazed frames, and more than 2,000,000 cloches are employed in the production of vegetables alone. The annual amount expended for manure is said to be £72,400, and the total receipts from the sale of vegetables and other productions of the market gardens to exceed half a million sterling, which, after all, does not seem a large sum, as the consumption of Paris includes a very considerable proportion of expensive early vegetables. This sum, does not, however, represent the entire consumption of Paris, as large quantities of Potatoes, Asparagus, and other vegetables are sent to the capital from all parts of the country.

Curiosities of Grafting.—We can graft the Apricot on the Plum, and the Peach on the Apricot, and the Almond on the Peach, thus producing a tree, with Plum roots and Almond leaves. The wood of the stem will consist of four distinct varieties, though formed from one continuous layer. Below the Almond wood and bark we shall have perfect Peach wood and bark, then perfect Apricot wood and bark, and at the bottom perfect Plum wood and bark. In this curious instance we see the intimate correspondence between the bark and the leaf, for, if we should remove the Almond branches, we might cause the several sorts of wood to develop buds and leafy twigs each of its own kind. Each section of the compound stem has its seat of life in the cambium layer, and the cambium of each reproduces cells of its own species out of a common nutrient fluid.—*Cultivator*.

India-rubber Trees in India.—Dr. King, in a report on the Botanic Gardens of Calcutta, says, of India-rubber, that he "brought from England in November six plants of the Para rubber tree (*Hevea brasiliensis*), which were given to him by Dr. Hooker, of Kew. Para rubber is one of the finest sorts known in commerce, and in view of the possible early exhaustion of the rubber-yielding Figs of Assam, the introduction to India of the plant producing it becomes a matter of some interest. The rubber of this country is obtained from Fig trees, most of which (at least in early life) are parasitical. These Figs begin life by establishing themselves on the tops of other trees, along the trunks of which they send their twining aerial roots, which ultimately reach the ground. In course of time the supporting trees are killed, but the Figs remain and grow, often entirely obliterating their predecessors. It is from the long aerial roots of these Figs that rubber is mostly got, and not from their branches. After a few severe tappings a Fig ceases to yield rubber from its roots. The artificial formation of India-rubber plantations on the summits of tall forest trees is impracticable on any large scale. The Para rubber tree has no such parasitic habits in early life. The white juice, which on hardening forms crude rubber, is yielded freely by all parts of the plant, which moreover promises to be one of easy propagation.

A Reform Indeed.—As soon as we have got politics settled, business reformed, and human nature elevated, I am determined to form a society for the reformation of botanical names. Botany has been the Noah's Ark of pedants. Every absurd whim of every pragmatist professor has been turned into Greek or Latin, and hung about the neck of unhappy flowers. One might as well hang a dictionary around a child's neck by way of ornament, as to impose on flowers such outrageous and outlandish names as now defend the science of botany from all approach, as a fort is defended by a line of *chevaux-de-frise*.—H. W. BEECHER.

THE GARDEN IN THE HOUSE.

TABLE PALMS.

It is not an easy matter, without a series of engravings, to explain what plants are suitable, and what plants are unsuitable, for the decoration of a dinner-table. An experienced hand will be able at once to decide whether certain plants are, or are not, suitable for a certain table, if they are shown to him in the room in which they are to be used. But a plant that may be suitable for one form of dinner-table arrangement may not be suitable for another arrangement of the same objects, used for the general decoration of the table; and again, a plant that forms a part of a very pleasing arrangement under one mode of lighting the room, may be quite out of place when the position and distribution of the lights are altered. While, therefore, it is impossible to describe accurately what is a table-plant, it is not difficult to mention several qualities in a plant which would prevent its use for table-decoration. Perhaps it may be more convenient if my remarks are given under the headings of size, height,

Height.—This must be judged from a sitting position and not by anyone standing; and the suitability of a certain plant will often depend upon whether its pot can or cannot be put through the table. Speaking generally, plants fit for the table may be divided into three classes, those which you can see over, those which you can see through, and those which you can see under. Plants which can be looked over must not be more than 15 inches high, and with these dwarf plants (which are placed nearest to the diners) the advantage is immense if you have the power of sinking the pots through the table, since you not only get rid of the ugly pots and of the pot-covers (which are often still more ugly), but you are enabled to employ taller and more graceful plants, and yet not exceed the limit of 15 inches. Plants which can be looked under must have slender stems and foliage that does not fall within 20 inches of the cloth. Plants which can be seen through are those which possess both tall foliage and dwarf foliage, but have no leaves which interrupt the sight between the distances of 15 inches and 20 inches above the table.

Form.—Of dwarf plants, which are below the line of sight, the



Dæmonorops accidens.

Areodora regia.

Dæmonorops palembanensis.

form, pots, and lighting—an arrangement to which reference can be more readily made than if any other plan were adopted.

Size.—This should be in proportion to the size of the room, since large plants in a small room are out of character, while a number of small plants in a large room, rarely, if ever, produce the good effect which results from the judicious selection and arrangement of a few specimens of suitable dimensions. I mention this, because first impressions have great weight with many people, and it is a point of no small importance with them, that, upon entering a dining-room, there should be nothing out of proportion to disconcert their critical taste. The size of the plants should also be in proportion to the size of the table, and to the size of the other plants used on the table. If a plant is used in the centre of a table, it should be larger than any other on that table. If the table is two or three times as long as it is broad, two plants may be used in the central line of the table; and, these should be a pair, and larger than all the rest. If the table be still longer, a third and still taller plant may be placed in a line between these two, as shown in the three engravings herewith. On wide tables, where more than a central and two side rows can be introduced, the smallest plants should be nearest to the edge.

form is not of any consequence; thick, bushy little plants often look well, if not too crowded; but they look much better when arranged alternately with slender plants of the same height. With taller plants, however, bushy forms are inadmissible; they must always be of slender, elegant, and graceful growth. Tall plants, fit for the table, may be either stemless, like the young forms of *Arecas*, and many other kinds of Palms, in which the long leaf-stalks spring from near the surface of the earth; or with a slender stem which only carries foliage at the top, above the line of sight. In the latter case, a spray of some climbing plant should be twisted round the bare stem, and for this purpose, *Lygodium* and *Myrsiphyllum asparagoides* are the best climbers that I know of. Another suitable form of tall plant may be exemplified by young *Mimosas* and young *Cupanias*, which have the slender stem furnished at intervals with horizontal leaves or branches, which do not interrupt the view across the table.

Lighting.—When dinners take place, as they usually do, after dark, the illumination of the table or the room is a matter which seriously concerns the table-decorator. His arrangements must, in most cases, be subservient to the mode of lighting, because he cannot

alter that mode, the burners being fixtures. But when a table is lighted by candles or table-lamps, he is not so much hampered in the selection of suitable plants, as he may in that case be able to arrange his lights to show off his plants, and to prevent their casting a shade on the table. The usual mode of lighting, by a gas chandelier suspended over the table, is the worst possible mode for the use of tall plants, because the strong light immediately over them must, of necessity, cast a dark shadow on the cloth, unless the foliage is very finely divided. In such cases it is often better to use some flat decoration of flowers and foliage in the middle of the table, or to use a dwarf plant for the centre, than to introduce any large-foliaged tall specimen. For the display of plants on a table without their throwing a shadow on the white cloth, there is no better plan of illuminating the room than that of bracket-lights, high up, and evenly distributed around the walls, by which arrangement the shadow that any one light would cast (if only that one burner were lighted) is overpowered and destroyed by the light coming from several other burners.

Pots.—These I always put through the table whenever I can; and the tables that I am accustomed to amuse myself in decorating are all of them as full of trap-doors as the stage of a theatre, or perhaps I should rather say, as full of holes as the frame-work that supports the top will permit. Where these conveniences are not yet introduced, the flower-pots must be in some way concealed, either by enclosing them in a circular bed of flowers, or by tying Moss round them (as shown in the accompanying engravings), or by dropping them into one of the numberless forms of covering, made of terracotta, china, glass, cardboard, paper, papier-mache, or wood. Of these I least dislike terracotta.

W. T. P.

THE FRUIT GARDEN.

INARCHING VINES.

THIS is an operation which might be oftener practised with advantage than it is; for many varieties, both strong and healthy, but which do not fruit satisfactorily, are frequently discarded, when they might be profitably utilised in this way. In inarching, the first object should be to select a stock suitable to the variety with which it is to be united, a point on which much depends; for some varieties, when inarched, turn out worse than on their own roots, while others gain in every way by the operation, when suitable stocks have been chosen for them. The varieties from which improvement may be looked for from inarching, are what are known as tender and shy growers, and imperfect fruiters. These demerits, I may mention, are, however, seldom or never universal. I never yet knew a Vine which did not succeed well somewhere; but a certain variety may "flourish like a green Bay tree" in one county, without any special attention, and, indeed, under bad management, and in another district, may not be induced to thrive either by fair or foul means. In such cases as the latter, inarching may be resorted to with advantage. Where a new variety, too, is to be introduced into a Vinery, it is not always practicable to remove a Vine to make room for it; and where a suitable stock exists, it may be "worked" on that without any kind of inconvenience. A whole houseful indeed, of Black Hamburgh might be converted into one of Golden Champion; a houseful of Muscats into one of Barbarossa, or a houseful of diseased and barren Vines into one of health and fertility, all in one season, without disturbing a single rootlet. Vines propagated from eyes and inarched one season, will produce a fair crop the following one, and will grow luxuriantly where root-action has been vigorous from the beginning. Seedling Vines may be rapidly tested by means of inarching. Raised from seed and inarched this year, they may be proved the following season. As to the operation itself, it is extremely simple; the young Vine to be inarched, should have been struck from an eye put into a pot in February, and grown on until May or June; it should then be taken to the Vine which is to form the stock; if growth sufficient to reach the part where the union is to take place, when resting on the ground, has not been made, the pot should be set on some temporary elevation to allow of the union being effected about 12 inches from the base of the stock; when this is done, with a sharp knife cut a small slice about 2 inches long from the side of the young Vine, and then do the same with the stock; these incisions may either be on young green wood, or on old hard stems. Place the two cut portions face

to face, so as to fit exactly; then take a strong piece of soft bast and tie them sufficiently firm together to prevent displacement. In ten days or so they will be partly united, when the bast should be slightly loosened in order to admit of expansion. Do not let the young Vine in the pot suffer from want of water, and in six weeks after being tied together, both stock and scion will be firmly united. The bast should be occasionally looked to in order to prevent its pressing too firmly against the wood, but it should not be taken off altogether until a considerable time after a union has taken place, as the slightest twist will sever the new and tender connection. When a union has been effected beyond a doubt, which generally takes two months to accomplish, the stem of the young Vine immediately below the union should be half cut through, and the stock, above the connection should be treated in a similar way; in another ten days both stock and scion may be cut through, when the young top will get the benefit of a full flow of sap from the root. These remarks apply to Vines which have had their crops removed before a union was effected, for where the Grapes are hanging on a Vine, the top, of course, cannot be cut away; under these circumstances, it is best not to do any cutting until the Vines are pruned, when the whole may be neatly dressed. The union should be as near the bottom of the stock as possible, just about the lowermost spurs where the Vine begins to produce shoots.

As regards stocks, Muscat of Alexandria and Black Hamburgh are the best for general use. I do not know a variety of Grape which will not succeed on either the one or the other. But to confine ourselves to these stocks alone, would not, I fear, meet everybody's requirements. Gros Colman inarched on Black Prince becomes much altered in appearance. The bunches of Gros Colman are, naturally roundish, indeed generally as broad as they are long. Those of Black Prince as is well known, are long and tapering, and singularly enough, the bunches of Gros Colman when on this stock become tapering. Gros Colman is a noble late black Grape, which does well on its own roots everywhere, and inarching in this case is unnecessary. If, however, a plant of it from a cold end of a house is inarched on a Vine at the warmest end, the fruit will ripen more perfectly than it otherwise would do. Black Prince or Black Hamburgh make suitable stocks for it, and Burchardt's Prince is a good stock for white Lady Downes. Burchardt's Prince is a late black Grape of little merit, and as it is generally grown in a late house, the white Lady Downes, which is one of our best late white Grapes, equal indeed, in every respect, to the black variety of that sort, can be conveniently and profitably worked on Burchardt's Prince. Mrs. Pince's Black Muscat, a good late black Grape, but on its own roots a shy setter, succeeds perfectly in every way on the Black Alicante, setting when so treated as freely as that useful kind; Barbarossa (Gros Guillaume) on its own roots is not a very prolific Vine, so far as heavy cropping is concerned, but grafted on the Muscat of Alexandria it does superbly. This fine showy variety ranks amongst the best of late-keeping black Grapes, but it needs heat, and to have it in perfection it should be grown in the temperature of a Muscat-house. West's St. Peters is improved on the Black Hamburgh; Madresfield Court is equally liable to crack and decay when inarched on either the Muscat or Black Hamburgh as on its own roots. Inarching does not appear to improve its condition. Judging from its behaviour here, and elsewhere, I am inclined to think that it will never gain honourable posterity, a circumstance certainly to be regretted, as, up to a certain point, it has a very captivating appearance. I saw it in fine condition last season at Mr. Meredith's, grown on the extension system, a whole house being devoted to it. Waltham Cross has done well here on Black Prince. The appearance of Raisin de Calabre, is improved when "worked" on Black Hamburgh, but the flavour of this variety is against its extensive use. Foster's Seedling does better on White Nice, than on its own roots. The Frontignans, both grizzly and white, are conspicuously enlarged both in bunch and berry when inarched on the Muscat of Alexandria, and their flavour is in no way deteriorated by the union. Muscat Hamburgh is an exquisitely flavoured valuable black Grape when perfectly finished, but it is one of those varieties which does well in but few places on its own roots. It should be "worked" on the Black Hamburgh; thus treated

at Drumlanrig, it is invariably all that could possibly be desired, while, on its own roots it is just the reverse. At Eccles, again, only about two miles from Drumlanrig, it grows, sets, swells, colours, and thoroughly matures three and four bunches on its own roots as perfectly as any Black Hamburgh could do, and that too in a very small confined structure, where one would least expect to find perfect Grapes of any kind. Golden Champion in some places does better grafted than on its own roots, but the finest fruit of it I have ever seen was cut from a Vine of it on its own roots. Black Hamburgh and Muscat of Alexandria make suitable stocks for it. Here we have a considerable number of it on its own roots, and this season it has been unusually fine and free from blemish. Notwithstanding what has been said to the contrary, this Grape can, undoubtedly, be cultivated to perfection, when it amply repays any extra pains that may have been bestowed on it to acquire that condition. Duke of Buccleuch needs no inarching to ensure luxuriant growth or fine fruit; so far as the 100 and odd rods of it here on its own roots are concerned, I may say, that the fruit which they have borne has been in every way, simply, perfect. Mr. David Thomson has, however, grown it at Drumlanrig for years on the Muscat of Alexandria, and his productions are quite equal to any I have seen. At Floors Castle, Mr. Knight has it grafted on the Black Muscat (Muscat Hamburgh), a stock on which it makes splendid growth, equalling that of any young Vine about the place, and as strong and firm as a good substantial walking stick. Mr. Johnson, of Glamis Castle, says: "I have had it on the Hamburgh, Rivers's Sweet Water, and Duchess of Buccleuch, and I find that the two last named varieties have produced by far the best grafts, which are strong, short-jointed, and thoroughly matured. The fruit which I have of it this season (two handsome bunches on one shoot) is the production of a graft put on the Rivers's Sweet Water in the month of May last year. These bunches have ripened and coloured equal to those of a Buckland Sweet Water. They have been ripe upwards of two months, and, to all appearance, will keep as long again."

Clovenfords.

J. MUIR.

POTS FOR PINES.

JUST a word or two more on this subject and I have done with it. In the first place, let me remove some misapprehensions under which Mr. Muir is labouring. If he had read my last paper attentively, he would have seen that my remark, "wholly unsupported by theory or practice," had no reference whatever to the pot question, but to the relative size of the plants and the fruit. Neither did I intend to "disparage" moderate-sized fruit, as he imagines, when I spoke of them being preferred for market purposes. I am too familiar with the markets in London, Manchester, Liverpool, and elsewhere, not to know that the greatest trade is done in moderate-sized Pines, say from 2½ to 4 pounds each. Though I grow Pines for a private establishment, I dispose of numbers of surplus fruit every year, and while I could dispose of such fruits off-hand for cash, I find that fruit above 4 or 5 pounds are reluctantly accepted, except to sell on commission. The reason is, that if a customer cannot get a moderate-priced Pine to ornament his dessert, he will do without it rather than pay, perhaps, £3 or £4 for a single fruit. Mr. Muir should also bear in mind, as I hinted before, that this discussion has no reference to such things as "spongy wood," "over luxuriance," and such like; nor yet to Vines, though I am prepared to maintain the well-established fact, that the strongest Vine cane, no matter how strong, is the best for all purposes, if well ripened; and if this is not the opinion of Vine-growers of note, I have mistaken the whole tenour of their teaching and practice. It will be new to Pine growers to learn from Mr. Muir that the smooth Cayenne is a weaker grower than the Queen. Let Mr. Thomson note this in his next edition on the "Pine," for in the present edition the smooth-leaved Pine is described as being both taller and broader in habit than the Queen, with "very broad leaves;" and this description every Pine grower believes to be correct. We are told, moreover, by your correspondent, that the smooth-leaved Cayenne yields heavier fruit than the Queen, because it is its nature to do so. Surely he did not imagine that I meant to dispute such a "natural" deduction, because I offered a reasonable explanation for the difference in the two varieties. Mr. Muir surely believes in such a thing as "cause and effect," and if he does, will he tell us why smooth-leaved Cayennes, Rothschilds, and Providences yield the largest fruit? Can he get to any other legitimate conclusion, than that the fruit of these varieties is larger than the Queen, because the plants are larger and more vigorous? and if he

admits this, why should a strong Queen plant not yield a larger fruit than a weak one? When a batch of suckers shows fruit prematurely, are the fruits not always in exact proportion to the size of the suckers? and would they not be larger after the plants had added six months to their age? Taken singly, or in the aggregate, the largest plants will undoubtedly yield the best results—all other things being equal. This is the point at issue, and one which I hope Mr. Muir will observe and adhere to. If he can furnish any other logical solution, based upon physiological principles, or consistent with general experience, I hope he will do so. I cut a number of Queen's lately, and the largest of them was from the largest plant, and weighed 5 pounds 9 ounces, beautifully formed and finished. The stock or stem of this plant and others would have filled a 9-inch pot without there being room for any soil. I use 10, 12, and 14-inch pots, according to the size of the plants, and never fail to get all crammed with roots, like a Strawberry pot, nor fail to get almost every plant to show fruit at the time desired, year after year. The fact is, there need be no difficulty in getting Pines to show fruit when wanted, if the plants are well ripened. I saw, at Mr. Miles's place (Wycombe Abbey), last year, a division containing about thirty plants (Queens), not one of which had missed; nor would there be, I guessed, one fruit under 5 pounds, and many would be about 6 pounds weight, which Mr. Miles has frequently exhibited in London and elsewhere. The plants which bore these fruits were in 12 and 14-inch pots, and were uncommonly sturdy and strong, with leaves twice the usual thickness. I have to thank Mr. Muir for the measures of the pots which he furnishes; but, though he says he has always found the pots to correspond with the figures, both in England and in Scotland, the Scotch big 10-inch pot is no myth. I believe it is made in Glasgow, and I was under the impression it was the pot referred to by Mr. Muir; as, unless my memory misleads me, in a report of Clovenfords, which appeared in one or other of the gardening periodicals awhile ago, this pot is described as being in use for Pines there. Unfortunately, I cannot lay my hand on the number containing the report, and it is just possible I may have been mistaken. I freely admit, however, that, if Mr. Muir gets 4 pound fruit generally from 9-inch pots, he accomplishes a creditable feat; hitherto I have not seen this done in anything like a regular way. From big suckers—such as Pines in 9-inch pots will not yield when carrying large fruit at the same time—I have got large fruit, and seen the same obtained by others in small pots; but the suckers were raised under different conditions, and, we might say, just put into a small pot to fruit. Mr. Muir questions my statement respecting the Providence producing the largest fruit, and says the Lambton Castle Pine is the largest. I have not seen that variety; but I understand it is a very vigorous grower; yet I have not heard of any fruit of it weighing 15 lb.—a weight to which the Providence once reached at Gunnersbury. I have seen Pines planted out at Frogmore that would come near this weight. The plants were big for Providence, owing to being planted out, and the fruit was consequently large too. By-the-bye, how does your correspondent get over the difficulty that planted-out Pines always produce the largest fruit—a fact too well established to be at all disputed?

A PINE GROWER.

BUYING POT VINES.

It may be stated with safety, I think, that no kind of fruit tree is propagated every year for sale so extensively as the Grape Vine. Thousands are annually grown and sold for planting and fruiting in pots. What becomes of them all, and what success buyers experience with their stock generally, it is impossible to tell; but I have no doubt that, if the truth was known, it would be a history of failure in many instances. Inexperienced cultivators buy largely, some for planting, and others with the object of fruiting their plants the following season, in the sanguine expectation that they will have a crop of nice Grapes at once; but disappointment is often the result. I speak from what I have seen. Clergymen, with perhaps a small glass house or two, retired men of business, and such like, go to a nursery for their Vines, in the simple faith that healthy or fruitful plants are only a question of price. Gross wood and foliage to them indicate perfection, and no doubt twelve pot vines, capable of bearing one hundred or more pounds of grapes, for the moderate sum of £6 or thereabouts, appears an excellent speculation; and so it would be, and such a result is nothing more than might be expected from really good canes; but the nurserymen do not, as a rule, produce such Vines, though I freely admit there are honourable exceptions. It is a significant fact that experienced gardeners never buy pot Vines for fruiting, if they can help it, but grow their own stock; and when they do buy, they find it exceedingly difficult to get what they want. For instance, plants fit to start in November for a crop in March and April can hardly ever be bought from the

trade; such plants are often advertised; but, instead of Vines that have been brown and ripe in June and July, and at rest and quite fit to prune in August or the beginning of September, you often find them to be green and succulent in the leaves even at the beginning of October, and quite unfit to be started till January at the soonest. I have occasionally sought to buy for myself or others early pot Vines, but never could find anything better than I describe. Growing pot Vines in bottom-heat, a practice fatal to all future success, has, however, been discontinued in many respectable nurseries, though vast numbers of this sort are still grown. Customers should never buy such plants, for they are good for nothing. Turned out of a hot-bed, and sent very likely from the grower to the salesman—who place them out-of-doors to turn the leaves yellow and give them a matured appearance—and thence to the buyer, the roots get killed, or, at the least, so greatly injured by the transition from heat to cold, as to render them worthless afterwards, either for planting or fruiting purposes. I had a score of Vines of this type sent to me once for planting; the canes looked vigorous, but, on shifting the plants out of the pots, I found every root black and dead. They were bought as plants “grown without bottom-heat;” but, finding this was not true, I refused to pay for them, and the claim was not pushed. A little experience will enable anyone to know a well-ripened Vine at once, and even to tell if bottom-heat has been applied to it. Vines intended for forcing early should be bought in in August or September, by which time the foliage should be assuming an autumn tint, and the canes be brown and hard. Varieties differ in the colour of their bark, some, such as the *Hamburgh* and *Royal Muscadine*, being darker than others; but all should be of a nutty-brown colour, and clean and shiny. Avoid canes of a pale whitish look, for they are always ill grown. See that the buds at the axils of the leaves are fully developed, brown, firm, and as plump as small Filberts. The thicker the canes the better, if they are well ripened, which you can tell by cutting a section of the wood with the knife. If it cuts hard, and the pith is not thicker than a pin, you may be satisfied. Vines said to be as hard as Oak are mythical. Look narrowly at the bark, and if you observe dusky circular patches here and there like a faded soot-mark, mildew has been there for certain, and will return again if the canes are not thoroughly washed and sulphured before starting, and the usual precautions taken. In healthy grown Vines the roots correspond with the branches. Turn the plant carefully out of the pot—it will do no harm to a properly rooted Vine—and if the roots are long, generally thick and fleshy, and much congregated at the bottom of the pot, they must be suspected of “bottom-heat” treatment; otherwise, if the roots are small, wiry, and pretty equally distributed round the sides of the ball, it is a good sign. Being satisfied with your bargain, have the plants sent home at once, and set out in some sheltered situation till they are pruned, taking care to protect the roots from exposure to the weather by tucking some short dry litter amongst the pots, but not by any means sufficient to ferment. But what about the “Phylloxera?” it will be asked. It must be admitted that the presence of this enemy in the country should make anyone hesitate to buy Vines at all when there are permanent Vineries on the place. But many cannot do otherwise; hence, they must be careful where and how they buy. Nurserymen have more interest in keeping their stock clean than anyone else; and I believe many of them are now careful either to save eyes for propagating from their own stock, or to get them from some private garden, which is known to be safe, regularly; so that all that customers can do, and should do, is to inquire into these matters, and obtain references from the firm with which they deal—and, above all, to scrutinise the Vines well before they buy them, both roots and leaves, with a lens, for it is well known that the insect may be there, though no indications of its presence may be visible at the time. J. S. W.

“SWEET” APPLES.

It is a common opinion that sweet Apples only are properly adapted to the feeding of pigs and cattle. There is no doubt that rich and sweet fruits are excellent for this purpose, but our observations do not tend to prove their pre-eminence over rich Apples that are sub-acid. We have fed cows, horses, and swine on both sorts. Like all succulent food, they tend to promote the health of all these animals, if regularly given in moderate quantities. Nearly the whole of the fattening of large swine has been well accomplished with the droppings of an orchard, nineteen-twentieths of which were sub-acid fruits. We should, however, prefer sweet Apples in planting new orchards exclusively for domestic animals. They are not enough planted for culinary purposes, as they are always excellent for baking, and they may be employed economically in certain puddings for the table. In order to call attention more particularly to planting sweet varieties, we give the following brief descriptive

list of most of the well known sorts, beginning with the earliest. The *Sweet Bough*, or *Large Yellow Bough*, is undoubtedly the most valuable of the earliest varieties. The tree, although not a strong grower, forms a round even head, and bears regularly and moderately; the fruit is large, handsome, and one of the most agreeable of all sweet Apples for the table, ripening immediately after our *Wheat* harvests. The refuse or inferior specimens might be profitably given to domestic animals. Immediately following the *Bough* are *Golden Sweet* and *High-top Sweet*, both vigorous growers and good bearers, the latter known in the west by the name *Sweet June*. *Summer Sweet Paradise* is a large good Apple, ripening nearly with the two last named; the tree is a rather straggling grower, and not so certain in its crops. *Autumn Sweet Bough*, or *Philadelphia Sweet*, is a medium-sized pale-yellow Apple, ribbed and furrowed, with good flavour, the tree quite productive. In autumn, we have *Jersey Sweet* during September, a good Apple, of medium size, the tree very productive, but a moderate grower, and not always hardy and healthy. *Autumnal Swaar*, a fine vigorous grower, good bearer, the fruit good size, rich yellow, oblate, excellent in quality, ripening about mid-autumn. Closely following this is *Munson Sweet*, also a good grower, and handsome fair fruit of excellent quality. *Haskell Sweet* is a large autumn variety, of excellent flavour; but, unlike the two last, somewhat liable to scabs or spots. The tree is a moderate grower, but great bearer. *Lyman's Pumpkin Sweet* is remarkable for the handsome growth of the tree and its great productiveness; the fruit quite large, always fair, but not so agreeable in flavour as most of this class; it is, however, a valuable sort. Among the early winter Apples are *Bailey's Sweet*, *Ramsdell's Sweet*, and *Honey Greening*. *Bailey's* is a large handsome red Apple, tender, sweet, and agreeable, the tree a strong grower and good bearer, and altogether a valuable sort. *Ramsdell's* is equally vigorous as a grower, quite productive, large, but of moderate quality. *Honey Greening* (distinct from *Green Sweet*, to which the name is sometimes applied) is an oblate, yellow fruit, very sweet, and of good quality; the tree of spreading growth.

There are several later winter sorts, prominent among which for wide popularity is the *Tallman Sweet*, on account of its excellent quality, fair appearance, and productiveness. The trees when young grow vigorously, but they never attain large size. As a proof of the wide approval of this Apple, it is starred in twenty different States of the Union in the catalogue of the American Pomological Society, with double stars in four. *Danvers Sweet*, ripening about the same time, is a freer and larger grower, and usually more productive, but the fruit is not equal to the last mentioned in quality. *Hartford Sweeting*, a large, dull red Apple, is borne on a vigorous tree, but is hardly of first quality; *Ladies' Sweet*, on the other hand, is an excellent Apple, of medium size, but the tree is a feeble grower. *Phillips' Sweeting*, of Ohio, somewhat resembles *Ladies' Sweeting*, but is hardly so good in flavour; it is more showy, and grows on a more vigorous tree, and altogether is a valuable sort. The old *Sweet Pearmain*, a well-known roundish conical dark red Apple, is much valued at the West, as well as the *Sweet Romanite*, more oblate in form, and lightly striped with red, keeping through winter. The tree of the *Sweet Vendevere* is crooked and straggling, but it bears heavy crops of a rich, juicy, and aromatic fruit. The *Wing Sweeting*, when fair, is a handsome, brilliant red Apple of fine flavour, but is not always reliable. *Green Sweet* is a moderately good sort, growing on a strong, healthy tree. *Broadwell* and *Winter Sweet Paradise* are valuable winter sorts in the west. We could add many more names to the preceding list, some of the sorts of considerable merit.—*Cultivator*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Weights of Pine-apples Grown at Frogmore.—I am told that *Providencees* have been grown at Frogmore weighing 15 lbs. each. Is that a fact?—*DENT*. [No; the heaviest *Providencees* grown at Frogmore were two fruit ripened there about twenty-five years ago; one of which weighed 14 lbs. 12 ozs., and the other 14 lbs. 4 ozs. The former was from a sucker, the latter from a crown of a fruit, stated to have weighed 15½ lbs., grown at Gimmisbury. The age of both the plants when the fruit was cut was twenty months. It may be added that the heaviest *Smooth-leaved Cayenne* ever grown at Frogmore weighed 11 lbs. 2 ozs. That was in 1845, and was probably the first fruit of that sort grown in England.]

Standard Fig Trees in Kent.—I have sent you a sample of Figs to prove that standard Figs can be grown in Kent as well as in Sussex. I quote you with your remark (see p. 220) that in many places in England they might be grown in great perfection, particularly in the southern districts. I have here two trees of the *Brunswick* in the kitchen garden, which I raised and planted out about fifteen years ago; they have borne some nice crops. As they make short jointed wood I never prune them. One has a 5 feet stem, the other, 4½; and in circumference they measure, respectively, 22 inches at the base, and 18 inches. Where they branch out into heads, the latter measure 16 feet through, and droop to the ground. I grow the same variety on walls from which I have gathered fruit weighing 4½ lb. each. Some varieties are more hardy than the *Brunswick*, but not so good in flavour.—*W. DIVES, Gardener to Wm. Moore, Esq., Winton House, Maidstone*. The Figs sent were as large and fine as any we ever saw grown, either against a wall or under glass.

THE INDOOR GARDEN.

THE EDIBLE PASSION-FLOWER.

(PASSIFLORA EDULIS.)

FEW greenhouse or conservatory climbers are more beautiful than this, and yet it is rarely one meets with it in modern collections. Planted out in a border of rich moist earth, it grows rapidly, often making shoots 10 and 12 feet long in a single season; and, when in vigorous health, gracefully draping pillars, arches, or rafters, with a profusion of glossy foliage. The flowers, although ornamental, are not so showy as those of many of the other species; but, under good culture, they are succeeded by bright purple fruits, each the size of a hen's egg, and which are favourites with many on account of their fine sub-acid flavour. Although, however, this is undoubtedly the best of all the edible Passion-flowers, *P. macrocarpa* and *P. quadrangularis* are by no means useless additions to the dessert, and those who have not acquired a taste for them in a fresh state rarely fail to relish them



Fruit of *Passiflora edulis*.

when preserved. Even, however, in the absence of fruit, *P. edulis* well deserves cultivation, as it is the most beautiful of all the *Passifloras* in habit, *P. (racemosa) princeps* not even excepted. I have often used the deep glossy leaves of *P. edulis* for garnishing fruit; and, for toning down bright colours, they are especially valuable, on account of the dense metallic depth of green which they possess. Like most of its congeners it is readily propagated either by means of cuttings, layers, or seeds, and those who require a climber of a deep tirt, for the ornamentation of a conservatory or corridor, cannot do better than avail themselves of it. Our illustration represents a fruit of the natural size, but gives no idea of the grace and beauty of the plant.

B.

ORCHIDS AT DOWN HOUSE, BLANDFORD.

THE remarks in the pages of THE GARDEN some weeks ago in reference to cut blooms of *Disa grandiflora* grown at Down House, Blandford, the residence of Sir William Marriott, necessarily give but an inadequate idea of the grandeur of this plant as a whole; the individual

spikes are fine, but a plant with thirty-two open flowers, on spikes 4 feet high, in the highest state of cultivation, is a sight indeed. At the end of July, I had the pleasure of seeing four such plants, or, rather, pans of plants, in the conservatory at Down House, besides sundry plants, on each of which there were several flowers, and anything more striking in the shape of an Orchid I never before witnessed. These *Disas* are grown in the coolest end of a cool *Odontoglossum*-house with a north aspect and close to the glass. They receive abundance of water in winter and spring, and a moist atmosphere is maintained for them; but a constant supply of fresh air is kept up about the plants, in order to mature their growth as it progresses. Numbers of other plants, equally bear witness to Mr. Hill's skill as a cultivator. For instance, I noticed plants of *Cattleya Aclandiae*, a difficult plant to grow, and of the rare *Oncidium Rogersii*; also very fine plants of *Cymbidium eburneum* and *Vanda cerulea*, in the *Cattleya*-house. Many fine *Dendrobiums* also occupy the East India house, such as *D. Falconeri*, *D. Wardianum*, and a splendid plant of *D. thyrsiflorum*; *Cattleya superba* also does best in this house. There were, moreover, fine plants of *Aërides Fieldingii*, and *A. quinquevulnerum* and affine. Here, too, were fine pans of various *Anætochili*, which visitors to the Bath and West of England shows at Bristol and Dorchester will remember. They consisted of *Lowii*, *Dayii*, *Dawsonii*, *Zanthophylla*, and others. On a former visit, I noticed many of the *Dendrobiums* in baskets suspended in a lean-to house, close to the glass in the full blaze of the sun, in order to ripen them for flowering. I also recollect seeing fine masses of *Pleione lagenaria*, *maculata*, and others; quantities of *Calanthe Veitchii*, *vestita*, *rubro-occulata*, and *lutea-occulata*, *Phalenopsis*, and many others. The *Odontoglossum*-house contains a fine collection of plants in wonderful health, and among them quantities of *Masdevallias*, consisting of *Veitchii*, a fine plant of *Lindeni*, *igneus*, and *Harryana*. Among the rare *Odontoglossums* were *miniaturum*, *nævium majus*, and a magnificent plant of *O. zebrinum*, with a spike 12 feet long. These are only a few of the many fine plants to be found in this rich collection. Among plants of another kind I noticed an immense example of *Lapageria rosea*, bearing hundreds of blooms spreading over one side of the conservatory, and throwing up great *Asparagus*-like shoots from among rough clods of soil under the stage. There were also quantities of finely-grown *Tuberoses*, both double and single, Italian and American. Allow me to add also that, among fruit, Peaches were in the finest health, and bearing crops of brilliantly coloured fruit; also *Nectarines*, on trees not twelve months planted under glass. Of Pines there were quantities, and most promising plants of Strawberries in pots.

Canford.

WILLIAM DICK.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Greenhouse Plants for Winter Blooming: W. R. The best are *Lapageria rosea*, *L. alba*, *Bourvardia leiantha compacta* and *jasminoides*, *Acacia Drummondii*, *platyptera*, and *oleifolia elegans*; *Statice profusa*, *Epacris* in variety, *Richardia aethiopica*, *Monochaetum sericeum multiflorum*, *Camellias* of sorts, *Cinchonarias* of sorts, *Azaleas* of sorts, *Cyclameus* of sorts, Chinese *Primroses*, *Daphne indica rubra*, *Hyacinths*, *Tulips*, and *Narcissus* of sorts; *Andromeda floribunda* (hardy), Tree *Carnations*, *Erica hyemalis*, *gracilis*, *grandinosa*, *colorans*, *cafra*, and many others; several good sorts of *Rhododendrons*, *Lilacs*, double white Almond and Tea Roses (all forced), *Jasminum grandiflorum*, *Cassia corymbosa*, *Chorozema Lawrenciana*, *Coronilla glauca*, several sorts of *Correa*, *Cytisus Atleeana*, *Leschenaultia intermedia* and *Baxterii major*, and *Leucopogon Cunninghamii*.—JOHN FRASER.

Greenfly on Ferns: F. M. Fumigate them with good tobacco paper when the fronds have acquired firmness of texture; if the plants are making young growth, syringe with tobacco-water instead.

Azaleas from Cuttings: T. E. When the young wood of the current season's growth is nearly ripe, it is in a proper state to make cuttings of. Insert the cuttings, not too closely, in 6-inch pots, in silver sand; cover with a bell-glass, shade from the sun. Strike in a gentle bottom-heat. As soon as struck, pot off the cuttings into 3-inch pots in peat and sand, and grow on liberally for two years in a warm or intermediate house.

Gloxinias from Leaves: W. F. Insert the leaf half-way into the soil, any time after the leaves are fully formed; or cut the ribs into short lengths, with a portion of the leaf attached, and insert these edgewise like ordinary cuttings in silver sand. Place them in a hot-bed or warm propagating pit, shade and water moderately. Or cut through the mid-rib at intervals, fix the lower end of each portion with a peg, put some silver sand about the cut, and keep shaded in a close frame with a brisk heat. They should root from every cut.

Bertolonia Van Houttei and Begonias at Ghent.—On visiting Mr. Van Houtte's establishment at Ghent, I was much pleased with a magnificent variegated plant, and, on enquiry, found it to be a seedling *Bertolonia* raised in that establishment, and called *Van Houttei*. Its leaves are dark green, beautifully reticulated with Solferino pink, a colour quite new amongst variegated plants. I also saw here some wonderfully fine plants of seedling *Begonias*, which had been treated as follows:—The seed was sown in pans early in the year, and in May the young seedlings were planted out in a cold frame, where they were slightly protected till they took fresh root; the lights were then taken off, and in this frame they made their growth and flowered in September. The individual flowers vary from 2 to 3 inches in diameter, and are of all shades of colour. These plants, when in blossom, are taken up and potted, and some thousands of them in one of the greenhouses certainly had a striking appearance. So many plants in flower at this season are not often met with. I may add that the soil in which they were planted had been well manured.—F. H.

THE FLOWER GARDEN.

WATER LILIES.

INCONSTANT April mornings drop showers or sunbeams over the glistening lake, while far beneath its surface a murky mass disengages itself from the muddy bottom, and rises slowly through the water. The tasselled Alder branches droop above it, and newly-opened Hepaticas and Epigeas on a neighbouring bank peer down modestly to look for it. Wishing to see these treasures of the lake in their morning hour, we encamped on a little island, which one tall tree almost covers with its branches, while a dense undergrowth of young Chestnuts and Birches fills all the intervening spaces, touching the water all around the circular shelving shore. We kindled a gypsy fire of twigs, less for warmth than for society. The first gleam made the dark lonely islet into a cheering home, turned the protecting tree to a starlit roof, and the Chestnut sprays to illuminated walls. Lying beneath their shelter, every fresh flickering of the fire kindled the leaves into brightness and banished into dark interstices the lake and sky; then the fire died into embers, the leaves faded into solid darkness in their turn, and water and heavens showed light and close and near, until fresh twigs caught fire and the blaze came up again. Rising to look forth at intervals during the night—for it is the worst feature of a night out-doors, that sleeping seems such a waste of time—we watched the hilly and wooded shores of the lake sink into gloom and glimmer into dawn again, amid the low plash of waters and the noises of the night. Precisely at half-past three, a sparrow above our heads gave one liquid trill, so inexpressibly sudden and delicious that it seemed to set to music every atom of freshness and fragrance that Nature held; then the spell was broken, and the whole shore and lake were vocal with song. Joining in this jubilee of morning, we were early in motion; bathing and breakfast, though they seemed indisputably in accordance with the instincts of the Universe, yet did not detain us long, and we were promptly on our way to Lily pond. Will the reader join us? Almost every town has its Lily pond. Ours is accessible from the larger lake only by taking the skiff over a narrow embankment, which protects our fairyland by its presence. Once beyond it, we are in a realm of dark Lethean water utterly unlike the sunny depths of the main lake. Hither the Water Lilies have retreated, to a domain of their own. A decline in business is clear revenue to Water Lilies, and the waters are higher than usual because factories are idle. But we may notice, in observing the shores, that peculiar charm of water, that, whether its quantity be greater or less, its grace is the same; it makes its own boundary in lake or river, and where its edge is, there seems the natural and permanent margin. And the same natural fitness, without reference to mere quantity, extends to its children. Before us lie islands and continents of Lilies, acres of charms, whole, vast, unbroken surfaces of stainless whiteness. And yet, as we approach them, every islanded cup that floats in lonely dignity, apart from the multitude, appears as perfect in itself, couched in white expanded perfection, its reflection taking a faint glory of pink that is scarcely perceptible in the flower. As we glide gently among them, the air grows fragrant, and a stray breeze flaps the leaves, as if to welcome us. Each floating flower becomes suddenly a ship at anchor, or rather seems beating up against the summer wind, in a regatta of blossoms. Early as it is, the greater part of the flowers are already expanded. Indeed, that experience of Thoreau's, of watching them open in the first sunbeams, rank by rank, is not easily obtained, unless perhaps in a narrow stream, where the beautiful slumberers are more regularly marshalled. In our lake, at least, they open irregularly, though rapidly. But, this morning, many linger as buds, while others peer up, in half-expanded beauty, beneath the lifted leaves, frolicsome as Pucks or baby-nymphs. As you raise the leaf, in such cases, it is impossible not to imagine that a pair of tiny hands have upheld it, or else that the pretty head will dip down again, and disappear. Others, again, have expanded all but the inmost pair of white petals, and these spring apart at the first touch of the finger on the stem. Some spread vast vases of fragrance six or seven inches in diameter, while others are small and delicate, with petals like fine lace-work. Smaller still, we sometimes pass a flotilla of infant leaves, an inch in diameter. All these grow from the deep, dark water—and the blacker it is, the fairer their whiteness shows. But your eye follows the stem often vainly into those sombre depths, and vainly seeks to behold Sabrina fair, sitting with her twisted braids of Lilies, beneath the glassy, cool, but not translucent wave. Do not start, when, in such an effort, only your own dreamy face looks back upon you, beyond the gunwale of the reflected boat, and you find that you float double, self and shadow. Let us rest our paddles, and look round us, while the idle motion sways our light skiff onwards, now half-embayed among the Lily pads, now lazily

gliding over intervening gulfs. There is a great deal going on in these waters and their fringing woods and meadows. All the summer long, the pond is bordered with successive walls of flowers. In early spring emerge the yellow catkins of the Swamp Willow, first; then the long tassels of the graceful Alders expand and droop, till they weep their yellow dust upon the water; then come the Birch blossoms, more tardily; then the downy leaves and white clusters of the Modlar or Shadbush (*Amelanchier canadensis* of Gray); these dropping, the roseate chalices of the Mountain Laurel open; as they fade into melancholy brown, the sweet Azalea uncloses; and before its last honeyed blossom has trailed down, dying, from the stem, the more fragrant *Clethra* starts out above, the Buttonbush thrusts forth its merry face amid wild Roses, and the Clematis waves its sprays of beauty. Mingled with these grow, lower, the Spiræas, white and pink, yellow Touch-me-not, fresh white Arrowhead, bright blue Vervain and Skullcap, dull Snakehead, gay Monkey-flower, coarse Eupatoriums, Milk-weeds, Golden-rods, Asters, Thistles, and a host beside. Beneath, the brilliant scarlet Cardinal-flower begins to palisade the moist shores; and after its superb reflection has passed away from the waters, the grotesque Witch Hazel flares out its narrow yellow petals amidst the October leaves, and so ends the floral year. There is not a week during all these months, when one cannot stand in the boat and wreath garlands of blossoms from the shores. These all crowd around the brink, and watch, day and night, the opening and closing of the Water Lilies. Meanwhile, upon the waters, our queen keeps her chosen court, nor can one of these mere land-loving blossoms touch the hem of her garment. In truth, she bears no sister near her throne. There is but this one species among us, *Nymphaea odorata*. The beautiful little rose-coloured *Nymphaea sanguinea*, which once adorned the Botanic Garden at Cambridge, was merely an occasional variety of costume. She has, indeed, an English half-sister, *Nymphaea alba*, less beautiful, less fragrant, but keeping more fashionable hours—not opening (according to Linnaeus) till seven, nor closing till four. Her humble cousin, the yellow Nuphar, keeps commonly aloof, as becomes a poor relation, though created from the selfsame mud—a fact which Hawthorne has beautifully moralised. Undisturbed, however, the Water Lily keeps her fragrant court, with few attendants. The tall Pickerel-weed (*Pontederia*) is her gentleman-usher, gorgeous in blue and gold through July, somewhat rusty in August. The Water-shield (*Hydroptelis*) is chief maid-of-honour; she is a highborn lady, not without royal blood indeed, but with rather a bend sinister; not precisely beautiful, but very fastidious; encased over her whole person with a gelatinous covering, literally a starched duenna. Sometimes she is suspected of conspiring to drive her mistress from the throne; for we have observed certain slow watercourses where the leaves of the Water Lily have been almost wholly replaced by the similar, but smaller, leaves of the Water-shield. More rarely seen is the slender *Utricularia*, a dainty maiden, whose light feet scarce touch the water—with the still more delicate floating white *Water Ranunculus*, and the shy *Villarsia*, whose submerged flowers merely peep one day above the surface and then close again for ever. Then there are many humbler attendants, Potamogetons or Pond-weeds. And here float little emissaries from the dominions of land; for the fallen florets of the *Viburnum* drift among the Lilypads, with mast-like stamens erect, sprinkling the water with a strange beauty, and cheating us with the promise of a new aquatic flower. These are the still life of this sequestered nook; but it is in fact a crowded thoroughfare. No tropical jungle more swarms with busy existence than these midsummer waters and their bushy banks.

Gathering Water Lilies.

Every flower bears a fragrant California in its bosom, and you hesitate to leave one behind. But, after the first half-hour of eager grasping, one becomes fastidious, rather scorns those on which the wasps and flies have alighted, and seeks only the stainless. But handle them tenderly, as if you loved them. Do not grasp at the open flower as if it were a Pæony or a Hollyhock, for then it will come off, stalkless, in your hand, and you will cast it blighted upon the water; but coil your thumb and second finger affectionately around it, press the extended forefinger firmly to the stem below, and with one steady pull you will secure a long and delicate stalk. Consider the Lilies! All over our rural watercourses, at midsummer, float these cups of snow. They are Nature's symbols of coolness. They suggest to us the white garments of their Oriental worshippers. They come with the white Roses, and prepare the way for the white Lilies of the garden. The Water Lily comes of an ancient and sacred family. It has assisted at the most momentous religious ceremonies, from the beginning of recorded time. The Egyptian *Lotus* was a sacred plant; it was dedicated to Harpocrates and to Nofr Atmoo—Nofr meaning *good*, whence the name of our yellow Lily, Nuphar. But the true Egyptian

flower was *Nymphaea Lotus*, though *Nymphaea cœrulea*, Moore's "blue Water Lilies," can be traced on the sculptures also. It was cultivated in tanks in the gardens; it was the chief material for festal wreaths; a single bud hung over the forehead of many a queenly dame; and the sculptures represent the weary flowers as dropping from the heated hands of *belles*, in the later hours of the feast. Rock softly on the waves, fair Lilies! your Eastern kindred have rocked on the stormier bosom of Cleopatra. The Egyptian Lotus was, moreover, the emblem of the sacred Nile, as the Hindoo species of the sacred Ganges; and both the one and the other was held the symbol of the creation of the world from the waters. The sacred bull, Apis, was wreathed with its garlands; there were niches for water, to place it among tombs; it was carved in the capitals of columns; it was represented on plates and vases; the sculptures show it in many sacred uses, even as a burnt offering; Isis holds it; and the god Nilus still binds a wreath of Water Lilies around the throne of Memnon. From Egypt the Lotus was carried to Assyria, and Layard found it among Fir cones and Honeysuckles on the later sculptures of Nineveh. The Greeks dedicated it to the nymphs, whence the name *Nymphaea*. Nor did the Romans disregard it, though the Lotus to which Ovid's nymph Lotis was changed *servato nomine*, was a tree, and not a flower. Still different a thing was the enchanted stem of the Lotus-eaters of Herodotus, which prosaic botanists have reduced to the *Zizyphus Lotus* found by Mungo Park, translating also the yellow Lotus dust into a mere "farina, tasting like sweet ginger-bread." But, in the Lotus of Hindostan, we find our flower again, and the Oriental sacred books are cool with Water Lilies. The orb of the earth is Lotus-shaped, and is upborne by the tusks of Vesava, as if he had been sporting in a lake where the leaves and blossoms float. Having got thus far into Orientalism, we can hardly expect to get out again without some slight entanglement in philology. Lily pads. Whence *pads*? No other leaf is identified with that singular monosyllable. Has our floating Lotus leaf any connection with padding, or with a footpad? With the ambling pad of an abbot, or a paddle, or a paddock, or a padlock? with many-domed Padua proud, or with St. Patrick? Is the name derived from the Anglo-Saxon *paad* or *pethian*? All the etymologists are silent on the subject; Tooke and Richardson ignore the problem; and of the innumerable pamphlets in the Worcester and Webster controversy, loading the tables of school-committeemen, not one ventures to grapple with the Lily pad. The Sanscrit name for the Lotus is simply *Padma*. The learned Brahmins call the Egyptian deities Padma Devi, or Lotus gods; the second of the eighteen Hindoo Puranas is styled the Padma Purana, because it treats of the "epoch when the world was a golden Lotus;" and the sacred incantation which goes murmuring through Thibet is "Om mani padme houn." It would be singular, if upon these delicate floating leaves a fragment of our earliest vernacular has been borne down to us, so that here the schoolboy is more learned than the savans. This lets us down easily to the more familiar uses of this plant divine. By the Nile, in early days, the Water Lily was good not merely for devotion, but for diet. "From the seeds of the Lotus," said Pliny, "the Egyptians make bread." The Hindoos still eat the seeds roasted in sand; also the stalks and roots. In South America, from the seed of the Victoria (*Nymphaea Victoria*, now *Victoria regia*) a farina is made, preferred to that of the finest Wheat—Bonpland even suggesting to our reluctant imagination Victoriapies. But the European species are used, as far as we know, only in dyeing. Our own Water Lily has some strange peculiarities of structure. So loose is the internal distribution of its tissues, that it was for some time held doubtful to which of the two great vegetable divisions, exogenous or endogenous, it belonged. Its petals, moreover, furnish the best examples of the gradual transition of petals into stamens—illustrating that wonderful law of identity which is the great discovery of modern science. Every child knows this peculiarity of the Water Lily, but the extent of it seems to vary with season and locality, and sometimes one finds a succession of flowers almost entirely free from this confusion of organs. Our readers may not care to know that the order of *Nymphaeaceae* "differs from *Ranunculaceae* in the consolidation of its carpels, from *Papaveraceae* in the placentation not being parietal, and from *Nelumbiaceae* in the want of a large truncated disc containing monospermous achenia;" but they may like to know that the Water Lily has relations on land, in all gradations of society, from Poppy to Magnolia, and yet does not conform its habits precisely to those of any of them. Its great black roots, sometimes as large as a man's arm, form a network at the bottom of the water. Its stem floats, an airy four-celled tube, adapting itself to the depth, though never stiff in shallows, like the stalk of the Yellow Lily; and it contracts and curves when seed-time approaches, though not so ingeniously as the spiral threads of the European *Vallisneria*, which uncoil to let the flowers rise to the surface, and then cautiously retract, that the seeds may ripen on the very bottom of the lake. The leaves show beneath the magnifier beautiful adap-

tations of structure. They are not, like those of land-plants, constructed with deep veins to receive the rain and conduct it to the stem, but are smooth and glossy, and of even surface. The leaves of land-vegetation have also thousands of little breathing-pores, principally on the under side: the Apple leaf, for instance, has twenty-four thousand to a square inch. But here they are fewer; they are wholly on the upper side, and, whereas in other cases they open or shut according to the moisture of the atmosphere, here the greedy leaves, secure of moisture, scarcely deign to close them. Nevertheless, even these give some recognition of hygrometric necessities, and, though living on the water, and not merely christened with dewdrops like other leaves, but baptised by immersion all the time, they are yet known to suffer in drought and apparently to take pleasure in heavy falls of rain.

The Royal Water Lily.

We have spoken of the various kindred of the Water Lily; but we must not leave our fragrant subject without due mention of its most magnificent, most lovely, relative, at first claimed even as its twin sister, and classed as a *Nymphaea*. We once lived near neighbour to a *Victoria regia*. Nothing, in the world of vegetable existence, has such a human interest. The charm is not in the mere size of the plant, which disappoints everybody, as Niagara does, when tried by that sole standard. The leaves of the *Victoria*, indeed, attain a diameter of 6 feet; the largest flowers, of 23 inches—less than four times the size of the largest of our Water Lilies. But it is not the mere looks of the *Victoria*, it is its life which fascinates. It is not a thing merely of dimensions, nor merely of beauty, but a creature of vitality and motion. Those vast leaves expand and change almost visibly. They have been known to grow half-an-inch an hour, 8 inches a day. Rising one day from the water, a mere clenched mass of yellow prickles, a leaf is transformed the next day to a crimson salver, gorgeously tinted on its upturned rim. Then it spreads into a raft of green, armed with long thorns, and supported by a framework of ribs and cross-pieces, an inch thick, and so substantial, that the Brazil Indians, while gathering the seed-vessels, place their young children on the leaves;—yrpe, or water-platter, they call the accommodating plant. But even these expanding leaves are not the glory of the *Victoria*; the glory is in the opening of the flower. We have sometimes looked in, for a passing moment, at the greenhouse, its dwelling-place, during the period of flowering—and then stayed for more than an hour, unable to leave the fascinating scene. After the strange flower-bud has reared its dark head from the placid tank, moving it a little, uneasily, like some imprisoned water-creature, it pauses for a moment in a sort of dumb despair. Then trembling again, and collecting all its powers, it thrusts open, with an indignant jerk, the rough calyx-leaves, and the beautiful disrobing begins. The firm, white, central cone, first so closely infolded, quivers a little, and swiftly, before your eyes, the first of the hundred petals detaches its delicate edges, and springs back, opening towards the water, while its white reflection opens to meet it from below. Many moments of repose follow—you watch—another petal trembles, detaches, springs open, and is still. Then another, and another, and another. Each movement is so quiet, yet so decided, so living, so human, that the radiant creature seems a *Musidora* of the water, and you almost blush with a sense of guilt in gazing on that peerless privacy. As petal by petal slowly opens, there still stands the central cone of snow, a glacier, an alp, a jungfran, while each avalanche of whiteness seems the last. Meanwhile, a strange rich odour fills the air, and Nature seems to concentrate all fascinations and claim all senses for this jubilee of her darling. So pass the enchanted moments of the evening, till the fair thing pauses at last, and remains for hours unchanged. In the morning, one by one, those white petals close again, shutting all their beauty in, and you watch through the short sleep for the period of waking. Can this bright transfigured creature appear again, in the same chaste beauty? Your fancy can scarcely trust it, fearing some disastrous change; and your fancy is too true a prophet. Come again, after the second day's opening, and you start at the transformation which one hour has secretly produced. Can this be the virgin *Victoria*—this thing of crimson passion, this pile of pink and yellow, relaxed, expanded, voluptuous, lolling languidly upon the water, never to rise again? In this short time every tint of every petal is transformed; it is gorgeous in beauty, but it is "Hebe turned to Magdalen." But our rustic Water Lily, our innocent *Nymphaea*, never claiming such a hot-house glory, never drooping into such a blush, blooms on placidly in the quiet waters, till she modestly folds her leaves for the last time, and bows her head beneath the surface for ever. Next year she lives for us only in her children, fair and pure as herself. Nay, not alone in them, but also in memory. The fair vision will not fade from us, though the paddle has dipped its last crystal drop from the waves, and the boat is drawn upon the shore. We may yet visit many lovely and lonely places—meadows thick with Violet, or the

homes of the shy Rhodora, or those sloping forest-haunts where the slight *Linnaea* hangs its twin-born heads—but no scene will linger on our vision like this annual feast of the Lilies.—*Atlantic Monthly*.

Fuchsia Ricartonii.—There are many places in which this useful plant thrives remarkably well, not only in pleasure grounds and shrubberies, but also by the sides of walks in plantations. A gravelly bottom suits it best, but it ought to have a place specially prepared for it, say a pit dug out 4 feet wide and 18 inches deep; let the best of the soil be put in the bottom, as this *Fuchsia* will often root deeply if it finds congenial material in which to develop its roots. If in plantations it should occupy the most open positions to be found in them, and as *Rhododendrons* may be expected to adorn woodland walks during summer, this *Fuchsia* furnishes a profusion of flowers in the later part of the year. This variety of *Fuchsia* is much hardier than many imagine, and where the sub-soil is sufficiently gravelly to give free passage to superfluous moisture to pass away, I have seen it grow into a great bush 6 and 8 feet high, and sometimes a healthy plant will throw up a shoot 6 feet long in one season. In exposed situations, or where the frost becomes very severe, it would be well to protect plants of this *Fuchsia* during winter. This may be done with Braken, and a few sticks driven into the ground to keep it from blowing away; if the tops are killed down by the frost in winter, young growths will push up from the root in spring.—G. DAWSON.

Prairie Roses.—Will any correspondent of THE GARDEN oblige by telling me what species of Rose is referred to in the following extract from *The Country Gentleman*?—INQUISITIVE. "No other hardy plant can show such a cataract of bloom, or display it with more elegance than these magnificent Roses. But they should stand well away from the eye, like an oil painting; and as for fragrance they have none to offer. The best position is against the wall of a back building, 100 feet or more from the front or chief point of view. The wall is convenient for support and spread, and the cool rich soil around and beneath the building secures luxuriance of growth. Red and white varieties planted together, as the Queen and Baltimore Belle, enhance the beauty of either, especially when distance lends enchantment to the view. That which mars their beauty, and the satisfaction of the culturist of these grand climbers, is the almost universal omission of seasonable pruning. All the old wood should be cleared out directly after blooming, just as is done with Raspberries after fruiting, and at the same season, about the first of August; the earlier it is done, the stronger will be the young wood for the next summer's bloom. All that is left will appear bright and growing, and, if neatly tied up, will delight the eye and fill the thought with expectations of a still finer, stronger, and brighter show next season, from the more numerous and better ripened fruit-buds and a freer flow of sap up the healthy young wood."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Retinospora pisifera aurea.—The growth of this plant, which has a rich yellow compact foliage, is slow, and it bears clipping remarkably well. These qualities have suggested to us its substitution for Box as a garden edging. We accordingly made experiments, which have proved perfectly successful. We find that, as compared with Box (1) It is quite as hardy, and less particular in the choice of soils; (2) It is dwarfer, and bears clipping much better, as the leaves are very minute and dense, whilst Box leaves, from their size, get chopped up and mutilated by the shears; (3) It is far more beautiful, being of a lively golden colour, and very compact and leafy; (4) The cost per yard will not exceed that of common Box.—A. MONGREDIEN.

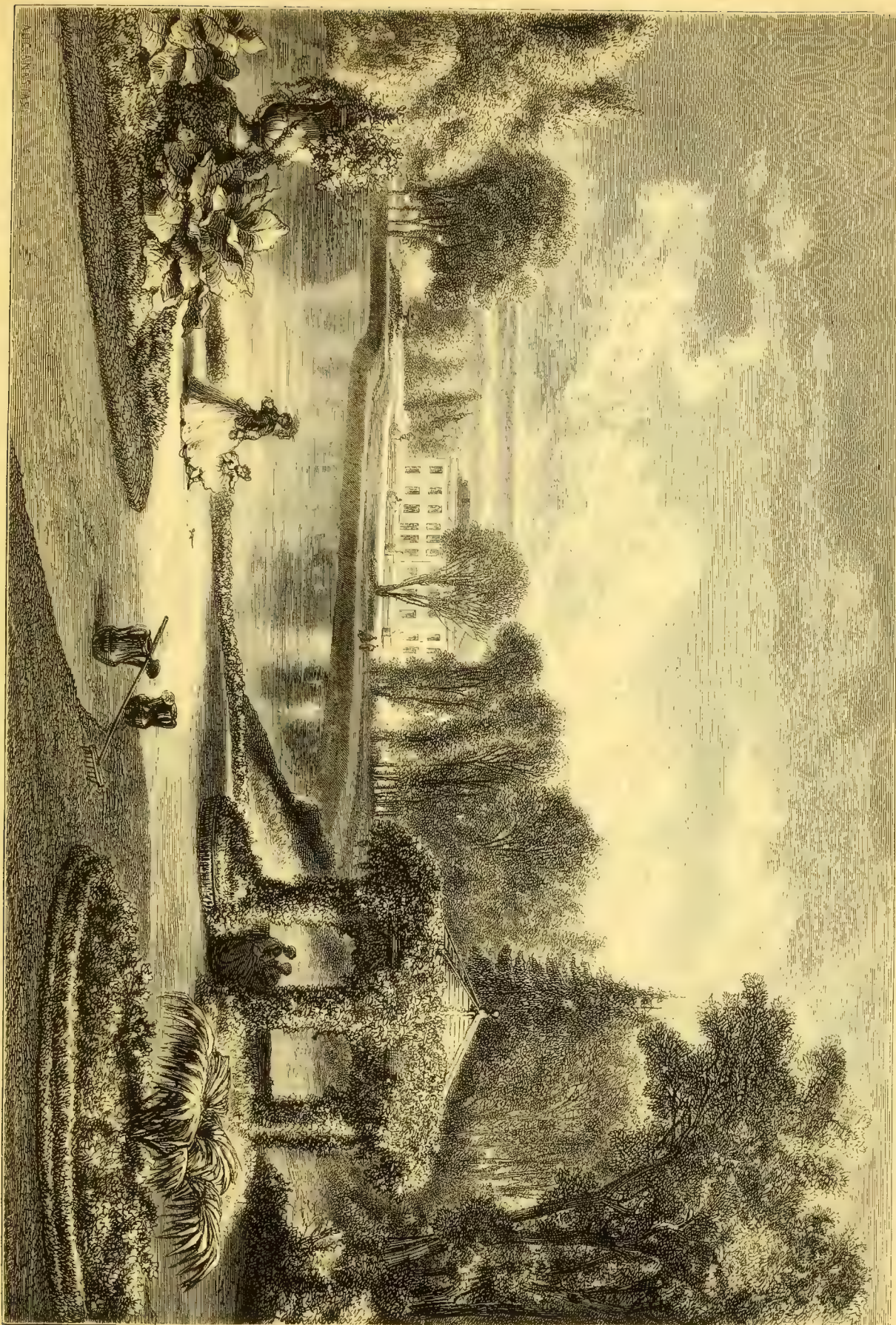
Double Primrose Culture.—A writer in the *Gardeners' Record* mentions having seen, during the past season, a patch of double Primroses growing in an open and somewhat light soil, that generally suffered severely during the hot dry summer months. "Some clay, in the form of a thin layer, which could but be termed a top-dressing of clay, was laid over the bed to the extent of one-half, and the effect was remarkable. The plants growing amid the dressing of clay were of quite a vigorous character, while the others, not so treated, had a deplorable appearance. No doubt the Primrose requires to be kept cool about the roots, and the beneficial effects of this practice were quite evident in this instance." [This simply means that the Primrose, like many other wood and copse plants, suffers from having both roots and tops dried by the sun in an open spot, and that some kind of mulching will help to counteract one of these evil effects.]

Bedding Calceolarias.—In reference to Mr. Grieve's remarks about bedding *Calceolarias* (see p. 257), allow me to say that there has been in a garden in Torquay a splendid bed of *Calceolaria aurea floribunda* in full blossom since May, and it will continue until frost destroys the bloom. It consists of plants the produce of cuttings put in in October, 1872; they were bedded out the following May, but all through that summer they made but little progress, and several died though kept constantly watered. In the autumn they were taken up and planted much closer, and, as it was a mild winter, they continued growing, and became in May a dense mass of foliage and bloom, so that the sun never penetrated to the roots, which is the cause of so many dying in the summer. Should the weather be too severe for them to stand through another winter, the best plan for ensuring a good summer bed is to plant out the cuttings of this autumn very early in the spring, about 6 inches apart, they will thus be established before the sun is too powerful. Not one plant has died in the bed in question this year, but those that were planted in May, although very good large plants, dwindled away, and half of them have died.—W. F. T. Torquay.

ROCQUENCOURT.

From the ancient state of straight-lacedness—clipped trees and miserable harshness and monotony of French Gardens—a very notable change has long been taking place, both in public and private gardens. From the style of Versailles and St. Cloud, Sceaux, or the hundred other public gardens of the same school, to that of the garden parts of the Bois de Boulogne, the Bois de Vincennes, or the Parc Monceaux is a marked progress indeed. A similar change is observable in the private gardens, and there is in no country more charming oases of sylvan beauty than in French gardens made within the past twenty years. The old and rusty walls of clipped trees have rapidly given way before quick growing fringes of beautiful trees and shrubs; lawns, not always so fine as ours, are now much preferred to such stony and gravelly hideousness as one sees in the Grand Trianon, and, in short, a charmingly natural and refreshing aspect reigns where, in older days, a much less pleasing state of things prevailed. Among the most interesting of French gardens is that depicted in our illustration, originally formed and richly stocked by Madame Furtado. Here, when we visited it, might be seen some of the best features of modern French horticulture, and a few points were also observed which it may be well to refer to as things to avoid. We see, for instance, faithfully rendered in the illustration, the too abrupt slope round the piece of water. There is no greater evidence of want of true insight into landscape gardening, or into Nature, than that of forming stiff straight slopes, particularly by the margins of water. Given the desire, it is in all such positions easy to secure a naturally and pleasantly graded slope, which is as inoffensive to the foot and to the eye as the prettiest carpet of natural lawn that girdles the lakelet among the hills. Another evil well shown in the picture is the formal walk alongside the water. This is in most gardens easily avoided. There is no more certain way of robbing the margins of a fine piece of park or garden water of all natural grace than by forming such a walk around it. Having thus freely pointed out what appears to us to be blemishes, it is pleasanter to record that here is one of the finest examples of the excellent system of planting-out stove and other plants distinguished by leaf-beauty. Instead of the plants being staged in pots, as is mostly the case with us, they are planted on irregular rocky banks with walks winding between, and the effect is charming indeed. It shows conclusively, that we may get rid of much of the stiffness that obtains in our hot-houses without sacrificing any advantages of importance. The conservatory has an open central part planted with a bold mass of tropical vegetation, well-shown, as it springs from a carpet of *Lycopodium* as green as the freshest Grass, with tiny rivulets here and there; the two wings are devoted to specimen Camellias and other greenhouse plants, also arranged in a natural and pleasing manner. From the roof of a stove arranged in this way, the flowers of that gloriously-coloured climber, *Hexacentris mysorensis*, hung in abundance, producing a magnificent effect.

Open Spaces in the City.—A meeting of the inhabitants of Broad Street, London Wall, and neighbourhood, was held at Gresham House the other day, for the purpose of taking steps for the preservation as an open space of the garden belonging to the Drapers' Company in Throgmorton Street, Mr. Robinson in the chair. The chairman said several meetings had been held with the view of preventing the destruction of the garden and the erection of buildings on the site. Notwithstanding the representations made to the Drapers' Company, the trees in the garden had been cut down and preparations made for forming a road across it from Throgmorton Street to London Wall. Open spaces were necessary for the health of London, and although it had been asserted that the land in question was valued at £15,000 per year for building purposes, the health, happiness, and recreation of the metropolis were of far greater importance. Mr. Jenkinson thought the Drapers' Company might yield to the pressure of public opinion. He suggested that the representatives of the ward at the Court of Common Council should be solicited to bring the subject under the notice of the Court. After considerable discussion it was arranged that the Court of Common Council should be asked to keep up the ground as an open space or recreation ground, and to acquire it, either by purchase or agreement, from the owners.



THE GARDENS AT ROCQUENCOURT.

THE KITCHEN GARDEN.

PARSNIPS.

IN some market gardens Parsnips constitute one of the principal crops, while in others none are grown. Where Parsnips do well, however, they are very remunerative. They require a deeply-trenched, free, well-drained soil. As a rule, market gardeners select a piece of ground for Parsnips that had been heavily manured the year before and cropped with Cabbages, Cauliflowers, French Beans, Celery, or similar crops, which had been cleared off in time to allow the ground to be trenched and ridged for at least a month prior to levelling it down for sowing. The variety almost universally grown is the hollow-crowned, a capital sort, that produces roots from 4 to 6 inches in diameter at top, and from 10 to 20 inches in length, and the crowns are, as a rule, buried a little below the surface soil. Preparatory to sowing, the ground is levelled, breaking the soil well in the operation, and finishing off by raking the surface smooth with a wooden rake, and sometimes rolling it. Shallow drills are then drawn for the seeds at about 18 inches or 10 inches apart; and, after being sown they are covered in by the feet or the back of a rake, and the whole is smoothly rolled. Sometimes, however, white or green Cos Lettuces are planted in rows at the above distances, and the Parsnips are sown afterwards in lines between them. In either case, Lettuces are planted—if not first, they are put in afterwards; and as the Parsnips take a long time to germinate, the Lettuces are removed before they injure them. The proper time for sowing is a much disputed point with gardeners, but nearly all agree that March is the best time. The market gardener, however, always makes a point of sowing Parsnips as soon after the middle of February as possible, provided the ground is moderately dry and warm, and crumbles freely when working it. The land is not manured for this crop; if it were, the roots, instead of forcing their way downwards perpendicularly, would ramify and become forked. The finest field of Parsnips I ever saw was one belonging to Mr. Bagley, of Turnham Green. The ground on which they grew was rich, deep, and rather heavy, a fault remedied, however, by continued manuring, working, and cropping. The year before this crop was put upon it, it had been heavily manured, and cropped with Cauliflowers, Lettuces, and Celery. After the Celery had been marketed about Christmas time, it was levelled, then trenched and ridged, but not manured, and in the middle of February, the soil being in fine condition, the ridges were levelled, and the seed sown in rows 20 inches apart. White Cos Lettuces were planted between the rows, and about a foot apart plant from plant in the row. The ground was twice hoed in a shallow manner between the Lettuces before the seeds germinated, and when the Parsnips were expected to appear, a man went over the plantation with a narrow iron-toothed rake, and raked the soil lightly over the rows, so as to dry and sweeten it, and to free it from lumps, so that the young plants might push through it easily. As soon as the Parsnips were fairly up and growing, they were thinned out a little, and after another short interval, they were again thinned, this time finally to 9 or 10 inches apart. The Lettuces were, when marketable, tied up and removed, and before they could choke or otherwise injure the Parsnips, which were now left sole possessors of the field. These soon grew apace, and received no further care than occasional hoeing; and, after they got too large for that, all the rank weeds were picked from amongst them. The roots made wonderful growth—so much so that, in many cases, a crack was visible along the line in which they grew. The bulk of roots from this field was enormous, many of the specimens measuring individually 7 and 8 inches in diameter at the shoulder, and 20 and 24 inches in length. It is injudicious to lift Parsnips for market before November, unless the demand for them is great and prices high, as they have not finished growing till that month. From that time until the middle of February, however, they are in fine marketable condition, and, being always left in the land where they grew, are lifted as required. Being thus left undisturbed, they preserve their flavour much better than they do when lifted and stored in pits—an operation which would

be both troublesome and expensive. Before growth begins—say, about the middle of February—every root is lifted, and, if not marketed at once, is stored in pits or sheds until a convenient season arrives for sending them to Covent Garden.

W.

RADISH CULTURE IN MARKET GARDENS.

THE only varieties grown in the market gardens about London are the Turnip and Salmon or long-rooted kind, and the white and red varieties of both these sorts, the majority being red. These constitute the principal winter crops in the market gardens, the first coming in in the first or second week in December, the second three weeks later, the third in the second or third week in January, and others from that time till the end of March or middle of April, an interval of about three weeks elapsing between each succession. The empty space at command, the character of the season, the succeeding crops, and other circumstances, determine the number and extent of the Radish plantations. Where a great extent of land can be cleared and sown at one time, the sowings are fewer than when only a small space can be cropped, and where, on an average, four or five successive plantations constitute the number grown. Radishes do not grow well in summer, the weather being then too dry and parching for them; but, in a moist season, they may be grown even in summer with advantage. If the weather is moist a sowing is made in August on a cool piece of ground, and another a fortnight or three weeks afterwards. Radishes are usually grown on ground that has just been cleared from Vegetable Marrows, French Beans, Seakale, Rhubarb, or Celery. The first two crops are usually grown under fruit trees; by sowing time the trees are leafless, and whatever pruning they may have required will have been given them; they, therefore, do not shade the plants, but, on the contrary, shelter them a little, and before the leaves begin to grow in spring the Radishes are marketed. The ground, after having been dug or trenched, and manured, if necessary, is lined off into 4 or 5 feet wide beds, having 1-foot alleys between them. The seeds are then sown, raked in with wooden rakes, and also slightly covered from the alleys, and rolled. About three inches in depth of rank litter are then strewn over the beds, and left there until the seedlings appear, when, if the weather is fine, and not very frosty, they are uncovered during the day time, and covered at night; but, during hard, frosty, and snowy weather, they are kept covered, even during the day-time. All the sowings are treated in the same manner as regards covering and uncovering; and, after the middle of February, if the plants are strong and the weather mild, the coverings are dispensed with, but kept in the alleys in case of emergency. Radishes, in their rough leaves, will stand a few degrees of frost with impunity, if the ground is not very wet. In April, the litter used in covering is removed and built into a large stack, to be converted into manure. The March and April sowings require no covering. Birds are very destructive to Radishes, from the time of sowing until the plants have made rough leaves; they eagerly devour the seeds before they germinate, and look after the husks after the seedlings appear, pulling up the young plants to effect their purpose. In order to counteract this mischief, boys are kept to watch and scare away the birds. In March the first out-door Radishes are fit for market, the largest being pulled up first, leaving the others for a week or two later in order that they, also, may become marketable. When drawn, they are tied into little bundles, bound round with a wythe, or piece of bast, washed after being bunched, and packed into baskets for market. After Radishes, may be planted Seakale and Lettuces, Cauliflower and Lettuces, preparations being made for Celery, Beet, Vegetable Marrows, French Beans, or any other crop suitable for the situation. Autumn Radishes are treated in the same way as those for spring use; but, as I have stated, the litter coverings are not used except in the case of hot dry weather. When Radishes are wanted earlier than those of the December out-door sowings, they are obtained from gentle hot-beds, made up about the 1st of January. These hot-beds are of two kinds—one the common frame hot-bed, the manure being in sunk

trenches; and the other merely a sunk bed of manure, covered with a few inches of soil, and mulched over, like the out-door beds.

Box Edgings.—Nothing, in my opinion, beats a good Box edging, either for the kitchen garden or for the most elaborate geometrical designs; but there is such a vast difference in the appearance of Box edgings at different places, that possibly a few remarks in reference thereto may not be unacceptable. In the first place, they must be clipped every year, and it is on this operation, and more especially on the time of year on which it is performed, that the appearance of the edging for the rest of the year depends. After repeated trials of clipping at different seasons, I am confident that the end of May or the first week in June is the best time for performing this operation, and for the following reasons, viz., that, although the Box is such a hardy plant, its young growths often suffer from spring frosts during May, and, by clipping at the time named, all irregularities of surface are removed; the young growth commences again immediately, and takes off that "straight-laced" appearance that always follows the use of the garden-shears. The young growth gives the edging a pretty appearance, and becomes thoroughly matured to stand any weather during the ensuing winter, which is not the case when clipping is deferred until the end of summer. The operation, although simple in itself, requires some considerable experience before it can be performed properly. For straight edgings, of whatever length they may be, we invariably stretch a line the whole distance to indicate the centre; then we take the desired width off either side, and level off the top with long clean cuts made by sharp shears. I have seen edgings laid in in almost every month in the year, and, with attention to watering, they have almost invariably succeeded; but I never saw them present an inviting appearance when the above date for cutting was very widely departed from. The greatest amount of injury is generally done through salting the walks to destroy weeds, when a heavy fall of rain floats the salt to the edging, thus most effectually destroying it. The next worst enemy to Box edgings is the foliage of garden crops or flowers overhanging them, and drawing them up weakly and blanched, so that they cannot withstand severe weather. Wheeling or treading on them also destroys them. Where proper attention, however, is paid to Box, the effect produced by it soon banishes from gardens all its so-called rivals.—JAMES GROOM.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Sutton's King of the Cauliflowers.—I have this season grown Walcheren, Early London, Vetch's Autumn Giant, and Sutton's King of Cauliflowers. The first two, literally speaking, burnt up, but the King and the Giant withstood the drought well. With me the Giant has always been rather coarse, even in a small state; while the King is a very delicate vegetable, equally large, and, in my case, larger than the Giant. I must, therefore, ask your readers to grow both and judge for themselves. I may add that these two varieties are very hardy, and certainly the best for a dry summer.—R. GILBERT.

Onion-fly. G. W. BURNETT. The grubs which attack your crop are the larvae of the Onion-fly, *Anthomyia ceporum*. It is very difficult to destroy them. Sift the beds with powdered charcoal, and pull up and destroy all that are affected, before the flies become developed.

Clubbing.—In the gardens at Streatham there is an unusual amount of clubbing at the roots of Cabbages, Broccoli, &c., this year; can you suggest a remedy?—SYMA. [The usual remedy, or rather preventive, is putting wood ashes in the holes along with the plants at planting time.]

Good Potatoes: H. KILLINEY. Hogg's Early Coldstream, Rivers' Royal Ashleaf, Daintree's Seedling, Paterson's Scotch Blue, Wheeler's Milky White, Waterloo Kidney, Haigh's Cobbler's Lapstone, Pebble White, Edgemoor Second Early, Rector of Woodstock, York Regent, and Yorkshire Hero.

Truffles.—Is the accompanying Fungus the true Truffle (*Tuber cibarium*)? I found it growing here under several of the Conifers.—A. B. [Your Fungus is *Melanogaster ambiguus*, a sort of Truffle. It differs from true Truffles in having the sporidia borne on spicules instead of being carried in asci.—W. G. SMITH.]

Liquid Manure.—The best is that from sheep or deer droppings. Put 2 or 3 bushels of manure in a basket, and plunge it in a tub or tank of water; the basket is to keep the sedimentary parts of the manure from mixing with the water. A better way still is to have a slate tank divided in two parts, and several layers of filtering gravel, &c., on one side, as described and illustrated in THE GARDEN, Vol. I. p. 220.

Mulching.—For a general mulch, there is nothing beats the soil itself. A thorough and frequent pulverisation of the surface a few inches down is the same as a coat of saw-dust, cut straw, or any similar fine application. Our corn fields, therefore, are mulched to advantage by the use of the cultivator. The mulch, if a thick one, will keep all beneath moist, will prevent weeds and the crusting of the surface, thus giving access to air, and keeping the ground cool. A good mulch for shrubs and young trees of all kinds, is one of green Grass, applied immediately after the last stirring of the soil, and sprinkled well with leached ashes. The ashes will draw moisture from the air, and help to protect the soil below. This, also, will add fertility. We have used it for several years with the most gratifying results. The severest drought has but little effect; there is a fine growth, seeming in defiance of the weather.—T. U.

Pyrethrum Insect Powder.—The commercial insect powder is very liable to failure, but a powder prepared as follows from the same plant (*Pyrethrum roseum*) is, according to the *Florist*, most effective against moths, fleas, bed bugs, and poultry vermin, and, when administered in a weak infusion, is also a useful internal remedy against worms. Seeds of the *Pyrethrum*, which are obtainable from large seed dealers, are to be sown in May, not too thickly, in a well-cultivated bed, and, if the weeds are kept down, will develop into strong plants by the autumn, although they seldom bloom before the next May or June. The flowers are to be plucked as they become fully developed, and the yellow disc-flowers separated from the red ray-florets, thoroughly dried in the shade, and finely pulverised. Flowers can be plucked even in the autumn, so that a few plants will produce a considerable quantity of the powder. As the plant is perennial, it can be propagated by division, and since it is indigenous to the Caucasus, it is not damaged by a low winter temperature.

The Turnip Caterpillar.—I beg to inclose you specimens of a grub having a most peculiar liking for young Cauliflower and Cabbage plants. The stem of the plant is so completely eaten through that the head falls off, and the insect may be found buried in the soil close to the plant. The insect is so very destructive that I am curious to learn its natural history, and whether there is any other mode of destroying it besides catching and killing it.—HY. EVANS, Swindon, Wilts. [The caterpillars are those of the Turnip moth, *Agrotis Segetum*, the life history of which, illustrated with figures, is given at p. 320 of Newman's "British Moths." It is the most destructive of all British insects, the Turnip fly not excepted. The egg is laid in June, either on the ground or on some plant, generally a seedling, close to the ground. Hatched in this situation, the infant caterpillar is enabled to attack the young Turnips, Carrots, Cabbage plants, Charlock, Mangold Wurzel, Radish, and also a number of the common weeds. Having tried the caterpillar with a great variety of provender, Mr. Newman says he can vouch for its feeding on any plant sufficiently succulent. When young its depredations are mostly about the surface of the ground, and it seems to delight in that particular part of a plant which lies between the root and stem; great numbers of young Turnips and Carrots are divided at this spot, the upper part being left to perish on the surface of the ground. It also visits our flower gardens. Very often in a bed of China Asters, that old-fashioned but still favourite flower, the leaves of a plant here and there will be found withering and curling up, and you become perfectly aware that it is dying, and cannot tell why. Just examine the stem where it enters the ground, and you will find it decorticated; the rind has been gnawed off all round, and the circulation of the sap being prevented, life is extinct. You probably pull up the Aster, expecting to find the enemy, but fail; his depredations were committed in the night, and before daybreak he has wandered away several inches, perhaps feet, and has burrowed like a mole in the light friable earth that gardeners love. It is tedious work looking for the mischief maker with candle and lantern, and picking up every caterpillar, and it is destructive to dig between the plants. Some gardeners, after becoming really acquainted with the enemy, sprinkle lime on the ground, others sawdust, others soot, others salt, others ammoniacal-water from the gas-works; but the result is uncertain and unsatisfactory. Among Turnips the havoc made by these grubs is awful; in September they burrow deep in the earth, and attack the bulb at the very base just where it becomes a tap root. Here they excavate large cavernous holes in the Turnips, and in these they henceforth reside, not returning to the surface until the supply of food is exhausted and the Turnip reduced to a mere shell, full of their excrement, and putrifying.—Ed. Field.]

Introduction of the Mulberry.—Mulberry trees were introduced into England, early in his reign, by James I., who spent £935 in planting them near his palace; and by royal edict, about the year 1605, offered packets of Mulberry seeds to all who would sow them, for the purpose of encouraging the cultivation of silkworms for the promotion of silk manufacture in this country. The royal patronage rendered the tree so popular that there is scarcely an old garden or gentleman's seat, which had existed in the seventeenth century, in which a Mulberry tree is not to be found. In 1609, Sieur de la Foret, who had in France a nursery of 500,000 plants, travelled over the midland and eastern counties of England for the sale of Mulberry trees, and distributed not less than 100,000 trees.

Sensible to the Last.—A strange legacy of 1,000 dollars is left to the Reformed Church at Peapack, New Jersey, by the will of Jacob J. Tiger, deceased, upon condition that the church grounds be kept free from Canada Thistles and Wild Carrots, and if the growth of such foul weeds is permitted to any extent, then the legacy is to be forfeited.

THE ARBORETUM.

THE JAPANESE PLUM.

(PRUNUS JAPONICA.)

THIS bears handsome rose-coloured double flowers, and has a dwarf branching habit; the leaves are oblong-elliptical, acuminate at the point, and finely and regularly dentated; the flowers, which resemble miniature Roses, appear about the beginning of April, and are succeeded by small, but rather pretty-looking, fruit, hung on slender foot-stalks; it is somewhat heart-shaped and rounded at the top, terminating in a hard thorny bristle; its skin is a deep red wine colour, smooth and glossy; the flesh adheres to the stone, and, when ripe, is pulpy and melting, and of a violet colour; its taste is not sweet—on the contrary, it is sourish and astringent; the plant



The Japanese Plum (*Prunus japonica* or *sinensis*).

fruits even when it is very small. An open light soil, slightly humid suits it best. It may be increased by means of cuttings, grafting, and budding.

ON INSECTS WHICH INFEST CONIFERÆ.

By ROBERT HUTCHISON.

THE insect world, with its teeming myriads of devouring creatures, varying so infinitely in habits, instincts, forms, and organs, is principally distinguished as to its functions, which may be said to be discharged with a view to great and general benefit and utility to the numerous species themselves, as well as with the object of destroying or removing nuisances which would otherwise deform or possibly infect the earth and its inhabitants. Many insects may, indeed, be said to be the earth's scavengers, the pruners of Nature's too luxuriant productions. But while a counterpoise is thus established and maintained for the purpose of checking any tendency to overgrowth in the vegetable kingdom, it not unfrequently happens that by the same agency the projects of man, in regard to the cultivation and use of many staples of vegetable economy, are frequently seriously interfered with, and sometimes altogether marred, by the predacious and destructive attacks of many of the species of this great division of the animal world. The study of entomology, and the consideration of its classification into (1st) insects which are beneficial to the growth of plant life by destroying others in their larva state, which would prove, if unchecked in population and distribution, most injurious to many trees, shrubs, and plants; and (2nd) insects which are themselves parasitical and inimical to the health and development of vegetable life in many forms, is a subject of the deepest interest to the close observer of Nature, and especially so to the student of arboriculture, as well as to every lover of forestry who is practically engaged in that all-engrossing occupation. It is with the insect world, in the latter of the two sub-divisions to which we have referred, that we purpose now to deal, and attention will be mainly confined in this paper to the most prominent and most popularly known species which attack Coniferous trees, and ravage

no less seriously the newer introductions of this family than they do our common Scotch Fir and other older and more commonly planted varieties of Coniferæ. It has been universally observed that trees of the Pine tribe, most frequently affected in their young stage by the attacks of insects, are those which are planted in soil previously cropped by the same description of trees. This will also be the case even although the previous crop may not have been affected in the least degree by such ravages, thus clearly showing that the cause of the destruction to the second crop does not lie in any sort of infection or transmission of the disease (if so it may be called) from the former occupants of the soil, but rather from the growth and establishment of larvæ in the ground itself, engendered probably by the dry condition of the soil caused by the previous cropping and absorption of the moisture by the numerous roots left in the ground after felling. This theory is supported by the fact, that frequently after thinning young Fir plantations insects are observed to attack a district where they had not been previously known. Probably the dried nature of the substratum of soil, intensified by the continued absorption of moisture by the old roots left in the ground, and also by the sprouting of some of the hardwood stools, may afford congenial habitats for the incubation and increase of these obnoxious enemies to the Fir tribe. Some authorities attribute the appearance of insects in such cases to the harbour afforded to the little animals in the decaying stumps, and to the weakened growth in the young wood of the trees left in the plantation from the diminution of moisture in the soil; but it appears more probable that the real cause lies in the drier state of the soil itself (independently of the thinning process), affording a suitable and congenial site for the base of the operations of the insects, rather than in the harbour afforded to them by the decaying stumps of trees thinned out. Thinning tends to produce stronger instead of weaker shoots of young wood upon the survivors, and the roots of trees felled will remain for a year or two in a sound condition, whereas the attack of the insects upon the plantation generally commences almost simultaneously with the process of thinning. In further support of this proposition it may be stated that in any wood where the attacks of beetles or other insects are observed after thinning, it will be found that, if there happens to be a wet bit (*i.e.*, a part less well drained than the rest), the trees there are happily exempt from the inroads of the invaders during the earliest stages of their attack. A careful observer of forest economy has already observed this fact in his own experience.* Another fact worthy of notice here, and to which particular reference will be made hereafter, is that these marauders of Coniferous plantations seem greatly enamoured of the cut and drying twigs and branches from early prunings or thinnings. It has been frequently observed that they prefer locating themselves among these cut branches to any other shelter or cover, so long as they find them in a fresh, although drying, condition; and they will invariably settle on them rather than on any part of the growing trees themselves. This predilection for shoots in a semi-dry or half-withered state is further attested by the circumstance that insects which attack the Fir tribe invariably commence upon a subject already evincing indications of sickness or decay. This is apparent in woods where no pruning or thinning has afforded them an opportunity of selecting their favourite haunts among felled branches and stools, and in the absence of such they are universally found to select apparently sickly specimens in preference to very robust and healthy plants, the juices of luxuriant and vigorous growths being probably too strong and rank in their vitality for their slower insect development and economy. One explanation of this generally observed preference of insects of various orders for diseased or sickly specimens of the trees they prey upon, is given by M. Andouin, Professor of Entomology in the Museum d'Histoire Naturelle at Paris, who has closely studied and noted the habits of many insects, and there appears to be good ground for accepting it as authentic and reliable. He thinks that the quasi-incipient decay of the tree is due, not to any inherent failure of the plant-life of the specimen, but to the attacks and boring operations in the bark of the tree caused by the search of the male insects (chiefly) for food, which injures the bark, inducing an unhealthy foliage; into these sub-cortical borings the female deposits her eggs; and so what we usually ascribe as the primary cause of the tree's sickness is merely the secondary result of the creature's operations, which are really an attack, in the first instance, upon a healthy tree for food. These borings weaken and exhaust the functions of the bark, whereupon the female deposits her eggs in the previously made workings of the male insect, while the act of burrowing and depositing the eggs and of so injuring the tree are commonly supposed to be confined only to trees which previously evinced signs of decay. In the *Review Entom.* (iv. p. 115), Silbermann also states, upon the authority of Dr. Ratzeburg, that the large weevil (*Pissodes notatus*) attacks the bark of young Pines with its trunk, and thus renders the trees unhealthy, prior to the female depositing her eggs

* W. Tivendale, Scott. Arbor. Soc. Trans., vol. vii. p. 80.

in them. The modes of insect attacks upon Coniferous trees may be directed towards the root, the bark, or the tender young shoots; but, in any case, their preference for the apparently weaker growths and constitutions holds good, whatever may be the method of attack, and whether their victim be a recently planted seedling or a mature tree. They probably, in the first instance, feed on their prey, and then breed in the cavities which their predacious attacks have made.

Season in which Insects are most Injurious.

The season when insects are most injurious to Coniferous woods is generally from the beginning of April to the end of June, and again from about the beginning of August till the middle or end of September, in favourable and mild weather or ordinary seasons. Of course, cold or wet weather may affect their operations; but, as a rule, these are the times of the year during which the greatest havoc is committed. Hot and dry summer weather, especially if succeeded by a cold, dry, frosty winter, favours the dissemination and increase of forest-feeding insects. The warmth of summer fosters their breeding, because by its genial influence their period of transformation from the larva state is shortened, and abundance of time is afforded for several broods to mature in succession; and, when the following winter is dry, a superabundant number of insects will be found in the ensuing spring; while, on the other hand, should the summer season prove wet and deficient in sunshine, and the following autumn and winter be damp, intensely cold, or snowy, the numbers of insects, whose increase had been previously checked by the adverse summer, will be materially lessened in the following spring, and the destruction to the woods for the time will be proportionately less severe. These remarks principally apply to insects which affect the bark of Pines, especially the Silver Fir (*Picea pectinata*), and confine their attacks to the tree through that medium, selecting chiefly those old trees the bark of which is not very hard. They direct their attack, in the first instance, to apparently weakly or dying specimens, or settle upon felled timber, feeding upon the stagnated sap of the inner bark, to which they bore, by the aid of their sharply-toothed jaws, in a direction slanting upwards as far as the sap wood, and from thence the female hollows out a perpendicular canal about 3 or 4 inches in length in the inner bark, with small niches close together on each side; in these she deposits her eggs, which are small round white objects, and, having covered them up with a slime of her own secretion, the larvæ are hatched in about fourteen days, and they again cut for themselves ramifying passages in all directions, which widen as they proceed, and resemble alphabetical letters in appearance, whence the insect has sometimes been popularly styled the "Typographer Beetle," or *Bostrichus typographus* (Fabricius). Should Silver Firs be scarce in the plantation, or the insects be so numerous as to overrun all the trees of that species, they will next attack any other Fir or Pine that may be most convenient. The full period necessary for the development of this mischievous little creature is about eight weeks from the egg to the full-grown beetle, and there are generally two broods in each season, the last sometimes remaining (owing to cold or wet weather) concealed dormant under the bark of the tree till the following spring, when they are fully developed. The injury to the Silver Fir by this insect will thus be seen to be effected by the destruction of the sap-wood, which every arborist is aware will ensure the speedy death of the tree, even when otherwise perfectly sound and luxuriant. A short description of this most destructive insect may here be interesting. It is, when full grown, a beetle of from 2 to 2½ lines long, and about 1 to 1½ lines broad, and hairy. On its first development to the perfect state, and while still under the bark, it is of a rusty yellow colour, becoming darker by degrees, and upon its escape to the open air is of a brownish-black; jaws, sharply toothed; eyes dark brown; wing-cases, deeply punctured, broader behind, deeply and obliquely impressed; the impressions with crescent-shaped margins, which have from 4 to 6 irregular teeth. Thorax and sternum always darker than the wing-cases. The female is distinguished by a thicker abdomen, and is less covered by the wing-cases. The larva or maggot is 3 lines long, wrinkled and white when it leaves the egg, soon becoming yellowish at the head; the back reddish striped; jaws, sharp; antennæ, short; feet, six in number and yellowish. The nymphs or pupæ are white and soft at first, becoming harder and yellower by degrees; they are almost the form of the beetle, only with pale indications of the wings, and with the feet drawn up under the body.*

Bark-boring Insects.

The bark-boring order of insects are not only very numerous, but they are probably, from their mode of attack, the most destructive of all to whose ravages the Pine family are liable. Not only is their process of destroying the inner bark and alburnum very detrimental to the tree, but the myriads of little cell-holes which they cut in the

bark, even if their further operations be suspended or prevented, interrupt the course of the descending sap, and admit the percolation of rain and other ungenial weather, which causes the bark to peel off, causing permanent injury to the tree. These bark-burrowers belong principally to the family of Scolytidæ, including the genera *Scolytus*, *Hylesinus*, *Hylurgus*, *Tomicus* (*Bostrichus*), &c. They may be distinguished into two classes, viz., those that bore into the heart and body of the trunk of the wood, and those that confine their inroads to the inner bark with its adjacent sap-wood or alburnum. Probably in the case of Coniferous trees, the operations of these internal wood-borers are chiefly of the latter description; while there are many insects which attack hardwood timber, and do not confine their inroads to the inner bark, but chiefly burrow into the heart of the trunk itself, rendering even large Willows, Poplars, Oak, Elm, and other timber trees so hollow as to be easily blown down. Of these destructive creatures are the stag-beetle family (*Lucanidæ*); and the very widely-branched tribe of *Capricorn* beetle, including *Prionus*, *Cerambyx*, *Lamia*, *Stenocorus*, *Leptura*, *Rhagium*, *Gnoma*, *Saperda*, *Callidium*, and *Clytus* (Fab.) Nor are the ravages of these mischievous creatures apparent and important in the forest and plantation alone, but very frequently the doings of some of them only become known in after years, when trees apparently sound have been felled and converted into timber for construction purposes. This is owing to the length of time sometimes necessary for the full development of the larvæ of many of the species. For example, in the order of Hymenoptera, one genus called *Sirex* is peculiarly destructive to Fir timber. In woods in Yorkshire, Stephens reports that whole plantations of Firs have been known to be destroyed by the operations of its larvæ under the bark. Two of the most conspicuous and destructive members of this genus are *Sirex gigas* and *juvenis*, both of which have been known to issue from the wood of joists and flooring in houses, after the timber had been wrought up and used for three years. The other principal bark-boring beetles which affect Coniferæ are *Tomicus pinastri*, *Laricis*, *Micographus*, *Typographus* (already referred to), and *Chalcographus*, which are happily, however, less known in Great Britain than in the Continental forests. We have, however, more common in this country, the well-known *Hylurgus piniperda*, and the two large weevils, *Pissodes notatus* and *pini*.* Another secondary ailment, which frequently befalls the victim of these bark-destroying insects, arises from the permanent disruption between wood and bark caused by the innumerable earwigs, spiders, flies, wood-lice, &c., which take possession of the cavities, allured by the exuding sap, no less than by the shelter which the loose bark affords. We have in Scotland little conception of the damage done to forests by these insects. Numerous instance are on record of the extent of their prevalence and ravages. In Germany and Austria, for example, it is stated that 80,000 of the *Bostrichus typographus* have been found in one tree; and so great is the vitality of this little pest that nothing short of fire will destroy it. In the beginning of last century it was unusually abundant in the Hartz forests, and continued in immense numbers for several years—first in 1757, when its ravages were very severe; again in 1769 and in 1783, when the total number of its victims in the forests mentioned amounted to 1,500,000; and the indirect result of its destructive agency was that the industrial pursuits of the surrounding country were seriously crippled, and in some localities actually suspended. Cold and wet seasons, however, in 1784 and in 1789, tended greatly to diminish its numbers. In 1790, however, it reappeared, and again in 1796, when serious fears were entertained for the safety of the few remaining Fir trees, which the ravages of former years had spared.†

Foliage and Root Destroyers.

But in addition to the insects which infest Pines by burrowing under the bark, there is an equally numerous and destructive host, whose ravages are carried on with similar precision in other ways, by attacking the foliage or the roots of the tree. The well-known substance termed "honeydew," is said to be the secretion of a species of aphid. The Larch in this country is infested with an aphid, whose wax-like "cottony" filaments are well known, and are often so abundant as to whiten the entire tree, and ultimately (if not removed or checked) to cause its destruction. Then again, there are other deposits caused by the aphidæ, which, although in themselves very beautiful, resembling as they do, when their mechanism is closely examined, fruit, blossoms, flowers, &c., are yet, if allowed to spread to undue proportions, full of danger, and sometimes convey total destruction to the tree. These deposits refer to the secretions of the *Aphis abietis*. The larvæ of several moths also attack Fir and other trees by destroying their foliage, viz., *Dendrolimus pini*, *Psilura monacha*, *Achatia piniperda*, *Bupalus piniarius*, *Orthotænia tuniunana* and *resinella*, &c. The three species of saw-fly (*Lophyrus pini* and *rufus*, and *Pamphilus erythrocephala*) tend further to swell

* Kollar on Insects, London's Translation, p. 368.

* This insect is said to be common in Ramech. † Latreille, His. Nat. iv, 194.

the number of the enemies of the Pine tribe, no less by their annual destruction of the leaves of the year, than by their pertinacity of attack, causing the unfortunate tree to draw upon the undeveloped resources of the next season's supply, to make up the deficiency thus caused in the present. This process, if repeated for a very few years, certainly terminates fatally for the tree. The ravages of the insects we have just referred to are, however, chiefly confined to the Continent of Europe, while in Great Britain their attacks, although they have been noticed, are not as yet to any great extent frequent or urgent. They have certainly been known to exist in Great Britain in several localities, but many of them appear not to be indigenous, so it may probably be assumed that their larvæ have sometimes been imported, either with seed or upon plants from the Continent. As some of the varieties, such as *Pissodes notatus* (Fab.), already referred to, have of recent years become more common in the United Kingdom, it is probable that it has thus been introduced. This remark applies also to *Acanthocinus ædilis* (Linn.), a little mischief-worker, called in some districts "the timber man." Thus we see that there are many species of insects whose destructive propensities are confined to the leaves, bark, and shoots of the Fir tribe, but there are also others, whose operations are directed to the annihilation of the seeds and cones. These are devoured, whether ripe or unripe, with great avidity. To this class belong *Eupithecia togata* (Hb.), whose larvæ are very destructive to the dried seeds of Scotch Fir, the *Phycis abietella* (Za.), which, in addition to tunnelling into the cones of *Pinus sylvestris*, *Pinus maritima*, and other Firs, and destroying their vitality, lodge themselves in the decaying wood of the tree, and thereby hasten the process of dissolution. The colour of all these insects at one period of their existence, so closely resembles the bark and other portions of the tree, that their detection is exceedingly difficult. Indeed, so well is their presence concealed by this means, that their existence upon the tree attacked is first known by numerous spots of resin being seen oozing from the bark. If examined carefully, each of these spots will be found to cover a small aperture, in which the insidious enemy has securely located himself. In this manner, whole trees, and ultimately, entire plantations, are overrun and seriously damaged. The list of those insects which attack roots and subsist upon them, is fortunately less numerous and important. Their ravages are chiefly directed against dead and decaying roots of cut trees. The best known of this class is the *Hylobius abietis*, which may be taken as the type of the whole. It is one of the largest of the British Curculionidae, or weevil family.

The *Hylurgus piniperda*.

The destruction caused to Pine plantations in this country by the attacks of the *Hylurgus piniperda*, and the wide area over which (both in England and Scotland) it has been observed, demand more than a passing notice in a paper like the present. It is very commonly found upon the Scotch Fir and Weymouth Pine (*P. strobus*), and many other Conifers, detracting oftentimes by its ravages from their deservedly admired, picturesque, and interesting appearance. This beetle belongs to the same family as one whose attacks upon the common Elm (*Ulmus campestris*) are well-known in Scotland—namely, the "*Scolytus destructor*," whose ravages upon the Elms in St. James's and Hyde Parks, London, created some years ago considerable interest and attracted public attention. The injury done by the *Hylurgus piniperda* consists in its destruction of the leading shoots of the Fir or Pine which it attacks. It is incessant in its operations when these are fairly commenced, and the following narrative of the mode and progress of its attack, by Mr. John Lindley, will give an accurate idea of the rapidity and devastating effects of this insect's operations. "For the purpose of observing its proceedings more narrowly," says Mr. Lindley, "I placed a shoot of the Scotch Fir under a glass with the insect. In about three hours after, it had just begun to pierce the bark at the base of one of the leaves; its mandibles seemed chiefly employed, its legs being merely used as a means of fixing itself more firmly. Four hours after, its head and thorax were completely buried in the shoot, and it had thrown out a quantity of wood, which it had reduced to a powder, and which nearly covered the bottom of the glass. In sixteen hours more it was entirely concealed, and was beginning to form its perpendicular excavation, and was busily employed in throwing back the wood as it proceeded in destroying it. There were evidently two kinds of this sawdust, part consisting of shapeless lumps, but the greater portion of very thin semi-transparent lamellæ, or rather shavings, which presented an invariably regular spiral appearance. I now examined it every day till the fifth, when I found it had emerged through the central bud at about an inch from where it had first commenced." Of this most destructive pest there are several varieties well-known throughout the United Kingdom, which may be specified as follows:—*Hylurgus piniperda* (Linn.); *H. rufus* (Mars.); *H. obscurus* (Mars.); *H. picens* (Mars.); *H. angustatus* (Gyll.)=ater

(Mars.); *H. rhododactylus* (Mars.); *H. ater* (Fab.)=*niger* (Mars.); *H. Boleti* (Mars.). They are found principally in June, July, and August, under the bark of the trees they have attacked. Hitherto it seems to have been the general opinion that they molested only diseased or decaying and feeble trees. Some authors even assert (Selby amongst others), that in no single instance have they ever been known to attack a tree in perfect health; but this point we have already referred to in this paper, and we think it is conclusively shown, from recent observations of their habits, that, in their incipient stages of attack, so insidious are their movements, that it is only after a time their presence is detected and then the vigour of the tree has already begun to decline, and thus the insect is assumed to be the result rather than the cause of the tree's failure.

Other Insects Injurious to Conifers.

As it would be impossible within our prescribed limits to describe and specify all the insects which are injurious to the Pine family, or whose ravages tend to retard the progress of that interesting class in our gardens and arboreta, we can only name a few others whose predatory habits are well known in certain localities, before passing on to notice some of the means of prevention which appear at least feasible, if not thoroughly effectual, for the prevention of the progress of the mischief which these animals occasion. In some situations the *Ernobius mollis* (Linn.) is frequently found upon both Scotch Fir (*P. sylvestris*) and *Pinus maritima*. Like the *Hylurgus piniperda*, it lives at the expense of the tree; but Perris (a French naturalist) asserts that it only attacks sickly or ailing plants. To this, as has already been stated, we object, and need not recapitulate the reasons. *Blastophagus piniperda* (Linn.), *Hylastes ater* (Payk.), and *Hylastes palliatus* (Gyll.), which in some places is very abundant, are all extremely destructive. One of the most fatal enemies of the Silver Fir (*Picea pectinata*), and which is to be feared is increasing in many parts of the country, especially in low-lying situations and in deep or heavy soils, is the *Bostrichus typographus* (Fabr.). This insect confines its attacks to the leading shoots of the tree. These it disfigures by settling upon their bark, and sucking the juices of the plant till the young wood is literally killed. It spreads with marvellous rapidity over whole trees, and frequently causes total destruction to every young Silver Fir in a plantation. Young thriving trees of about 8 to 20 feet in height appear to be most vulnerable to its attacks. The first appearance of the tree being infested with this plague is to be noticed upon the main stem and underside of the branches and young shoots, where it presents the appearance of a pure white minute substance in small patches close together, which, when microscopically examined, are found to consist of an adhesive cotton-like substance or covering, within which numberless clusters of the eggs of the creature are deposited, and occasionally the insect itself may be found. Gradually the whitened appearance spreads, and with wonderful rapidity the entire bole and branches seem to be dusted over with this downy matter, containing myriads of animals, each busily engaged with its sharp, though minute, proboscis in tapping the juices of the tree. Their settlement upon any tree will continue for two or three years, till, from first presenting a dwindling and unhealthy look, the unfortunate victim falls into a decline from which Nature cannot recover it. The spectacle presented, as the progress of decay proceeds, is indeed melancholy; the top branches and terminal shoots die first, and gradually, tier by tier, the handsome branches whither off, and in a very few seasons the tree is killed to the ground-line. This insect never attacks the leaves, but confines its ravages entirely to the bark of the young shoots and bole. A nearly allied species of *Bostrichus* (*B. laricis*) is very common upon the Larch. It does not, however, prove so fatal in its attacks. This insect is commonly and appropriately called "the Larch blight," from the appearance which it gives the tree when first attacked. The eggs may easily be detected concealed in the crevices of the young bark, and in the hollows around the buds, where they abound in winter time, and are easily discernible by the naked eye, like minute round black grains. They propagate in spring with marvellous rapidity, covering leaves, branchlets, and stem with a small black covering, which gradually whitens as those creatures weave, for a covering and protection from rain, a thick, white, viscid, woolly-like substance from their numerous pores, and which is the cause of that sticky and clammy feeling so well known in connection with the Larch tree. Happily, as has already been stated, the ravages of this little creature are seldom fatal, although it lives upon the juices of the plant, sucked out by means of its sharp proboscis, and according to the moisture and temperature of the season are its attacks more or less severe. For instance, if, by reason of unpropitious frosty winds in spring the opening foliage of the Larch should suffer a check, the trees so affected are more likely to be overtaken by the subtle and interminable exertions of its army of little enemies; and after such a season the Larch trees present a sicklier hue, and

have a more viscid feeling, than in a season when their vitality has flowed in an unchecked tide into a rapidly-developed foliage and blossom.

Insects Beneficial to Conifers.

But while thus presenting the dark side of this picture of Nature in her forest economy, it should also be borne in mind, that although a long catalogue of most destructive little insects has been named, there is also a very numerous class of insects which are not only not detrimental to the Coniferous or even hardwood trees, but are directly beneficial to them, and especially to the Pine tribe, in destroying, and thus keeping in check, other insects which are in themselves destructive, and many of which have been named in the foregoing pages. For example, in the United States of America, there exists a small black lady-bird, with two red spots on its wing-covers, named *Chilocorus bivulnerus*, which is remarkably useful in destroying bark lice and Pine-tree scale. Another small lady-bird, *Exochomus gnexi*, which is of a red colour, with two black spots on its wing-covers, and of similar habits, is also frequent, and deserves protective attention. Many of the ichneumon flies destroy whole acres of caterpillars infesting Fir trees; and without the aid of such small predaceous and parasitic allies, destructive insects would increase to such an extent, as to render all forest labour unavailing. It is well known, that while there are multitudes of noxious insects devastating whole forests, there are also many useful little animals, which by their operations may be said to act as the good genii of all trees, and chiefly of the Coniferous tribe. By diminishing the numbers of the injurious, they check their otherwise too rapid increase; and it is the more necessary to state this fact prominently, because, while the planter sees only the damage which is done by the obnoxious creatures, he seldom observes those little insects and their operations which, unappreciated because unseen, are silently, but not the less surely, engaged in counteracting the pernicious operations of the destructive myriads. To encourage and foster the increase of the innocuous classes of insects, should be the aim of every one connected with woodland management or plantations. This may, indeed, to a considerable extent, be achieved by preventing the too frequent and indiscriminate slaughter of many species of small birds and other forest denizens; for it is a remarkable fact, that the smaller birds feed much more generally (by a wise provision of Providence) upon such insects as happen to be injurious to tree life, than upon the harmless varieties. One of the most useful insects in attacking and destroying many of those allied species which are injurious to the Pine tribe, is the *Thanasinus formicarius* (Linn.), and the destructive abilities of this small creature are truly marvellous, depositing its eggs not unfrequently in the wood-boring larvæ themselves, as well as in the bodies of many other descriptions of very destructive insects, and also in the larvæ of numerous kinds of destructive beetles which live between the bark and wood of decaying trees.

Remedies.

While it will thus be seen, from the foregoing cursory sketch of some of the numerous enemies of Coniferæ, that their name is truly "legion," it yet remains that some remedial measures should be pointed out to check the ravages of these incursive hosts, and so preserve the healthful amenity of our beautiful Coniferous favourites. The first suggestion that naturally falls to be offered, with the view of preventing, or at all events, of retarding, the attacks of predaceous insects, is the entire removal, after felling or thinning any plantation or strip, of all brushwood, refuse, or root-stumps, which may be left. Indeed, the instant transport of these outside the wood, and their immediate consumption on the spot, is the first safe-guard which can be suggested for healthy plantations. In the case of woods where insect attacks have become apparent on Silver Firs, Scotch Firs, or other common nurses, the immediate felling and removal for burning of the infected victims may tend to stay or lessen the plague. Paring off the Grass all round infected trees, to the distance of a yard on each side, and burning the turf along with the diseased plant, is also a good and frequently an effectual remedy. Where it is practicable, and can be economically done, it is well, before planting any strip or ornamental belt of wood, to plough the ground deeply. This not only turns over the sod and affords less cover for insect life therein, but also affords a deep soft bed for the young roots of the new plantation, and thereby induces a rapid and healthy start, which is always beneficial to a newly-formed wood. Early thinning, boldly and fearlessly accomplished, so as to admit of a free circulation of air among the young plants, and to prevent overcrowding, and other obstructions to the radiation from the earth's surface, and evaporation from the trees themselves in their young state, has likewise a salutary effect in preventing the inroads of insect vermin. This is especially the case with Larch plantations, for Moss-covered bark, engendered by damp, close, and confined situations and habits of the tree, are fruitful of disease, and harbour innumerable parasitical foes

of the Pine tribe. When plantations have been once thinned, and are fairly established in growth, it suits very well to allow the second thinnings and prunings to lie in the wood for a year after being cut, and then to remove them suddenly in midsummer and burn them up. By this plan a vast number of those insects which prefer settling upon fresh cut and drying shoots and branches are destroyed; but as, generally speaking, in a first thinning of any wood, their presence would be rather in the way than otherwise, the plan suggested may be found effectual with a second or third thinning—say when the trees are sufficiently apart, and are probably from 12 to 18 feet high or thereby, so that a free circulation of air can play through them without being interrupted to any extent by the felled branches and other prunings during the first season after the thinning process has been effected. To prevent harbours for insects in hard-wooded plantations, the stools should be cut as low as possible, so as to prevent sprouting, and the formation of cluster heads and bush-like forms.—*Scottish Arboricultural Transactions.*

Indestructibility of Cork.—In taking down, a few years ago, in France, some portion of the ancient chateau of the Roque d'Ondres, it was found that the extremities of the Oak girders, lodged in the walls, were perfectly preserved, although these timbers were supposed to have been in their places for upwards of 600 years. The whole of the extremities buried in the walls were completely wrapped round with plates of cork. When demolishing an ancient Benedictine church at Bayonne, it was found that the whole of the Fir girders were entirely worm-eaten and rotten, with the exception, however, of the bearings, which, as in the case above mentioned, were also completely wrapped round with plates of cork. The fixings were completed by a layer of greasy-feeling clay, interposed between the cork and the masonry, and the parts of the walls opposite the ends of the timbers were of brick. It would be very difficult to believe that these extraordinary instances of the preservation of timber were not to be entirely attributed to the cork plates, the impermeability of which is well known. With experience saying so much in favour of a process so simple and inexpensive, it must be acknowledged that it deserves to be tried, more particularly for buildings of which we are more than usually anxious to preserve the timbers.—*Artisan.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Autumnal Tints of the Aspen (*Populus tremula*).—I have been interested in Mr. M'Nab's able article on planting for landscape effects. I have wondered, however, that he only speaks of the Aspen Poplar in reference to its habit, and omits all mention of the glorious tints of gold and crimson with which it is now adorning the landscape here. Enclosed are specimens of the latter (and not the brightest) from a dish, now in our entrance hall, of twigs of Aspen stuck into green Moss.—E. P., *Braemar*. [The leaves sent—gold suffused with brilliant crimson—were extremely handsome.]

Poplar Leaf-stalk Distortions.—I have sent you some Poplar leaves with singular swellings on their stalks. What is their nature?—W. B., *Wool Green*. [They are produced by *Aplous bursaria*, which, at an earlier stage, makes curious swollen distorted bags or purses on them, which have now dried up into the form sent.—A. M.]

The Chokeberry (*Pyrus arbutifolia*).—Messrs. Osborn sends us from their rich collection of trees and shrubs at Fulham specimens of the branches of this, laden with leaves of a burning red hue. It is one of the most valuable of the many shrubs that assume brilliant hues in autumn, and like many of these it is a native of North America.

***Libocedrus decurrens*.**—This plant, which for so many years European botanists, following Carrière, insisted on calling *Thuja gigantea*—calling the real *Thuja gigantea* *Thuja Lobbi*, has been again named by Professor Koch. He insists that it is not a *Libocedrus*, and has made a new genus for it. He calls it *Heyderia decurrens*.

Raising Conifers from Seed.—Sow in spring in pans well drained, and filled to within half an inch of the rim with light sandy loam, placing the seeds evenly over the surface, and covering with fine soil. Place the pans in a cold frame. The soil should be kept moderately moist, and, when the plants appear, admit air freely, keeping them as cool as possible. In winter, protect them from frost by a covering of mats, and in spring pick off round the pots, putting about a dozen plants round the side of a 6-inch pot. Continue them in a cold frame for another year; then, after being well hardened-off, they may be planted out in lines 1 foot apart, allowing 6 inches between the plants in the lines. Water them in dry weather until they are again established. In two years they will be good plants, requiring to be again transplanted. Allow them double the distance they had before, or they may be planted out where they are to remain.

***Veronica lobelioides*.**—This is a shrubby variety of *Veronica* of the speciosa type, with which I have been much pleased during the present season. It forms a dwarf compact shrub, about 18 inches high, with fine bright green foliage, and a profusion of spikes of bright blue flowers, which, as they become older, shade off into white. It is one of the most profuse flowering plants I know—every branch being clothed with the spikes, which proceed from the joints in opposite pairs, and which are produced in succession from every extending joint. From the ripe shoots of the last year's growth laterals are emitted, from which the flower-spikes spring; and from the end of May or the beginning of June the plant continues to produce its pretty spikes till growth ceases in the autumn. It is one of the best of shrubs for the margins of shrubberies, and also for planting on rock-work. —*The Gardener.*

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

In order to preserve the beauty of flower-beds and borders as long as possible, they should be frequently examined, and all decayed flowers and leaves at once removed. Look frequently over "carpet beds," as such plants as the Golden Feather Pyrethrum, *Stellaria graminea aurea*, and other hardy species may still be growing rapidly, and will consequently require to be occasionally stopped; this may, however, be discontinued in the case of such tender plants as the *Coleuses* and *Alternantheras*. The season is so far advanced, that a sudden and injurious depression of temperature may at any time take place, and it is, consequently, advisable to have at hand the means of covering up beds of tender plants which it may be desirable to preserve. Preparation should also be made for lifting and re-potting all plants that are to be kept for another year, whether intended for the production of cuttings in spring, or to be again bedded out in the flower garden. Old plants of most of the bedding *Pelargoniums* are generally found to flower more profusely than either autumn or spring-struck cuttings; and, such plants may, after being well cut in, be either potted singly in pots some 4 or 5 inches in diameter, according to the size of the plants, or, in order to economise space as much as possible, they may be planted tolerably close together in boxes or shallow pans; by adopting this method, a very considerable number of plants may be wintered in a comparatively small space. A similar system may also be pursued with plants of *Bouvardia*, *Lobelia*, *Lantana*, *Salvia*, &c.; also with *Coleus Verschaffelti* and its improved variety, together with the various species of *Alternanthera*; but, as regards the two last named families of decorative plants, it is necessary to place them at once in a moderately heated atmosphere, in order to get them established in their pots or pans as soon as possible. Single specimens of tender plants which may have, with the view of producing a desired effect, been planted or plunged in the flower garden, such as standard or pyramidal *Pelargoniums*, *Fuchsias*, *Dracænas*, *Abutilon Thompsoni*, &c., should now be pruned in where necessary, lifted, and carefully re-potted, and placed in their winter quarters; as should also *Auriculas* and other Alpine plants grown in pots, plunging the pots in cinder-ashes, or some other suitable material; but previous to doing this the drainage of each pot should be examined, and, if found defective, renewed. Cuttings of all sorts of bedding plants, which are fairly rooted, may still be freely exposed to the open air during the daytime, but should be covered up at night; while those which are only partially struck should have the advantage of a little artificial heat to enable them to complete the rooting process. The herbaceous border should still be gay with German *Asters*, and several species of late flowering *Phloxes*, *Solidagos*, *Tritoma Uvaria*, and *Aconitum japonicum*; the *Aconite* is an exceedingly valuable late-flowering plant, whose rich mazarine blue flowers blend gracefully with the bright yellow blooms of the *Sternerbergia lutea*, autumn *Crocus*, and the *Colchicum autumnale*, and its white variety. On account of the frequent falls of rain which have been recently experienced, and the weather still continuing mild, Grass continues to grow rapidly, and lawns will still require to be frequently mown, while the fast-falling leaves of the Lime and of other early defoliating trees, together with worm-casts and other littery matter, render the daily use of the broom necessary in order to keep lawns and walks in proper order.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

Where *Roses* are required to be in flower late in the autumn and at Christmas, select a few free-blooming Tea and Hybrid Perpetual pot *Roses* that are making late growth, and place them in a cold frame, over which some slight covering can be put, as sharp frosts may occur this month at any time, and the buds if touched, invariably turn black and die off instead of opening. Avoid also, using too much water over the plant; for, if the blooms become too damp, they rot off. Those requiring pot *Roses* for next year's forcing, should obtain them this month, so as to ensure good strong plants. See to such plants as were budded this summer, and loosen all ties where they require that attention, so as to prevent them from cutting the buds; also support strong growths, so as to protect the buds from being blown or broken off. Remove all dead flowers, so as to encourage lateral buds.—H. G.

Indoor Plant Department.

Azaleas that have set their flowers well, should have the young shoots neatly, but not too stiffly, tied up. Any *Heaths* showing signs of mildew should be dusted over with flowers of sulphur. Many of the

young central shoots should be removed, for if allowed to remain they are only a productive source of mildew, and that often unnoticed except upon close examination. *Heaths*, *Hedearomas*, *Dillwynias*, *Chorozemas*, &c., should now be housed, but though indoors, should have a free circulation of air. The *Pampas Grass* makes a good conservatory plant. For this purpose young plants of it should be kept in pots, plunged out of doors throughout the summer, and should be taken indoors about this season, just as they throw up their flower-spikes. *Coleuses* for keeping through the winter should be kept in small pots, and in airy houses, where they get well hardened, and consequently stand the winter better than they otherwise would do. In spring, after being re-potted and plunged in bottom-heat, they yield abundance of cuttings; some, however, strike cuttings now, to stand the winter, and to afford an additional supply in spring. Plants of *Solanum Capsicastrum* should be removed from the open air, where they have been plunged in beds, and either placed in frames or taken at once into the conservatory. Roots of *Lily of the Valley* should be lifted and potted for early forcing. Plants of *Mignonette* in 6-inch pots for winter flowering, should be thinned out a little if too thick. Some sow it in 4-inch pots, and after the plants attain a height of about 4 inches, the whole potful is shifted into a 6-inch pot without breaking the ball. *Liliums* that have done flowering should be laid on their sides out of doors, so as to prevent the soil from becoming saturated with water. *Clorodendron Kämpferi* should be dried off gradually in a cool house or out of doors. Those who care to have *Dielytra spectabilis* in bloom about the new year must soon bestow upon it some attention. About the latter end of the month a root or two of it may be dug up and potted into 32 or 24-sized pots, using leaf-mould and sandy loam in equal parts. If large specimens are required, a richer compost may be necessary when the plants receive their last shift; but a dozen or two of small plants, with plenty of bloom, are better than a huge specimen or two with a dense mass of foliage and a few spindly flower-spikes. After the potting and watering of the roots have been completed, they should be placed in a cool pit or frame, where they will speedily make fresh rootlets. When the pots become well filled with roots, the plants may be shifted to new pots a size or two sizes larger than those they now occupy. Where small plants only are required, they may be potted in the same sized pots again, adding a little fresh mould in the operation. When there is danger of much frost setting in, they should be moved to a Vinery or Peach-house that is likely to be started early in December, bringing the plants nearer the light and warmest part of the house as they advance in growth. Attention to sticking and tying out, and supplying the plants with weak liquid manure once or twice a week, when they are showing bloom, are all that is required to ensure the successful pot-culture of this highly ornamental and useful plant.

Violets.

The Neapolitan Violet is now beginning to open its buds, and the season has arrived when this gem among winter flowering plants should receive special attention. To ensure success and a continuous supply of flowers through the winter, a pit or frame facing the south should be filled with fermenting materials, consisting of leaves and stable manure well mixed together, the greater part being leaves which retain a steady bottom-heat longer than dung; the pit should be about 3 feet deep; if a dungbed, let it be 4 feet, so as to allow for sinking and settling down. The pit or bed having been prepared, cover the surface with 7 or 8 inches of soil, so as to leave the bed, when settled down, about 9 inches from the glass. Let the soil be two-thirds loam and one-third leaf-mould, and see that the loam is free from wire-worm and slugs, both great pests to Violets. Care must be taken in moving the plants not to shake the soil from the roots; pick off all side-shoots or runners and decayed foliage. Insert the plants in rows 9 inches apart and 6 inches asunder in the rows; give them a good watering, and shade during the daytime while the sun is hot; give plenty of air night and day, care being taken not to allow the bottom-heat to rise above 75°. As soon as they have commenced flowering and have made a little root-growth a little weak manure-water may be given, consisting of soot and sheep droppings mixed together in a tub; with this, water the Violets through a spouted pot so as not to wet the foliage. If red spider attacks the plants syringe in the morning and shade till the plants get dry; for too much moisture rots both flowers and foliage. During very sharp weather watch every opportunity to give a little air, as, in confinement, the flowers lose their odour; cover up early however, with a little sun-heat, if possible. When Violets are covered up mice and slugs often do much mischief; it is advisable, therefore, to look to the frame nearly every day, for if these pests are allowed to have their own way, not a single perfect flower will be left. By filling up a spent hotbed with some good plants of the *Czar*, put in in rows about a foot apart, and covered so as just to keep out frost, plenty of flowers will be produced, and when grown in this way they are much finer than

they otherwise would be, their flowers being erect and the mass of bloom greater.—H. G.

Indoor Fruit Department.

Selecting and storing soil for forming new Vine borders or for putting additions to old ones must not be neglected at this season. The best surface turf attainable should be taken to the depth of about 6 or 8 inches. The older, and fuller of fibres it is, the better. When cut into square pieces and laid grassy side downwards in mounds it is preserved in good order until required in the spring. When placed in narrow ridges the frost has a beneficial influence in mellowing such parts of it as may be of a clayey character. Here the most fertile soil for Vine growing is a substantial calcareous loam, obtained from the hill tops, where it is found here and there in small patches on whinstone. These patches, which have remained unmolested for ages, are rich in organic remains. As regards young Vines, such as were planted out during the past summer, if not already well ripened, they should be assisted to do so by means of a little fire heat. Thin away all lateral growths from them, in order that the air may play freely about the buds; keep a vigilant eye on Grapes hanging, in order to see that none are decaying; in cutting, take them from the top of the house first, say half-way down the rod; the bunches at the bottom of the Vines always keep better than those at the top; this is owing to the moisture rising and settling at the top of the house, while the bottom is comparatively dry; when well ripened it is surprising how perfectly Grapes will keep for months in the winter time if strict attention is paid to ventilation; see that abundance of air is given at the top of the house before sun-heat has induced moisture to rise; tardy ripening sorts of Grapes, such as Muscat of Alexandria and Gros Colman, may probably require a little fire-heat, in order to prevent the temperature from falling below 55°, and to ensure their perfect maturation. Scantily-rooted Pine suckers will yet require shading from bright sunshine; but, as such suckers are generally quartered in low pits and frames, the shading can, with little trouble, be removed when not needed. Keep the bottom-heat as near as possible to 85°, and see that the atmosphere is continually in a humid state. Queens intended for starting about the beginning of December should be kept very quiet; for these artificial heat, both for top and bottom, should not exceed 50°, and give no more water than what is absolutely necessary to prevent the plants from shrivelling. This early batch should consist of the most mature-looking plants, a condition generally indicated by the thick massive stem at the base of the leaves, and a centre somewhat open. Smaller plants, intended for succession, should be induced to grow for another month; water them as hitherto, and let the temperature range from 65° to 80°, according to the character of the weather outside. All damping overhead should be discontinued, except on very hot days; nothing is more hurtful to the Pine than water resting in the axils of the leaves; where it does so for any length of time the centre soon gets pale, tender, and blanched, and, not unfrequently, altogether decays.—J. MUIR, *Clovenfords*.

Hardy Fruit.

While dry weather continues it is good practice to get all manuring of fruit quarters, such as those devoted to Gooseberries, Currants, Raspberries, and Strawberries, completed; for the wheeling of manure among fruit bushes in wet weather is highly injurious, as when the texture of the soil gets destroyed in that way it can hardly be repaired. On open or clear ground the remedy for a ruined texture is deep digging or trenching; but, of course, that is impracticable among fruit trees or bushes. This is also a good season to top-dress any trees, on or off walls, that may have been overburdened by crops. A dressing of manure may yet invigorate the exhausted roots and help the buds to acquire greater plumpness. The roots, moreover, thus assisted will be able to replenish the exhausted tree at their leisure during winter. It is too often forgotten that the roots are never at rest unless frost-bound, and that the strength of the tree next season is much more a matter of winter replenishment than is generally supposed. Hence, doubtless, to a great extent, the success that attends autumnal top-dressings, which also preserve the roots unfrozen; and this immunity from frost confers a two-fold benefit on the tree. It protects the roots from the risk of mechanical rupture in the act of freezing, and enables them to carry on their slow, but sure, winter work without interruption. This is the month above all others for root-pruning rampant trees, sufficient vitality being yet left to heal the wounds, to prepare fresh roots—maybe to emit them; and there are several months before the plant, in which it can repair losses, and adapt itself somewhat to its changed condition before the top is called upon to grow, and the flowers to open. Continue to harvest fruit. The best mode of keeping Golden Drop, Imperatrice, and other Plums, is to hang them up by their stalks in front of a shelf, or

on a frame constructed somewhat on the principle of Kemp's useful Grape rail, dispensing, of course, with the tubes of water. A frame of such Plums would prove invaluable for dessert in October. As regards both Apples and Pears, there are various modes of storing them. Perhaps no better has been devised than laying of them on latticed shelves formed of Poplar or other flavourless wood. Deal is apt to flavour the fruit. Slate and iron are too cold, and all such linings as paper, cotton wool, &c., are better dispensed with. The fruit room should be cool, not damp, and kept as near to a uniform temperature as may be: 40° or 45° answer well for most fruit. The store room for fruit should be looked upon as a keeping, not a ripening, place. Practically, it is, to a great extent, both. But there are many Apples and Pears that have their flavour improved by being subjected to a higher temperature and a drier atmosphere for a week or so before use than the fruit room ought to furnish. It must also be borne in mind that few things more speedily lower the quality of fruit than a low temperature and an excess of moisture. Fruit should also be carefully sorted in storing. The best course is to divide it into three qualities—first, second, and third. In the last will be placed all fruit not likely to keep, and any too small for table and in anywise deformed. The first quality to be composed of the finest fruits, and especially those likely to keep the longest. This will save labour and trouble afterwards, as well as facilitate the safe and long keeping of the fruit, for nothing is so fertile a source of loss in this way as decay; one imperfect fruit has often been the seed-bed of destruction to an entire shelf, tray, or drawer of sound ones. In gathering, it need hardly be added that the ripest should be the first harvested, and that those unripe may, in most places, safely remain ungathered till towards the end of this month. Neither unripe nor over ripe fruit keep well, and the former is good for little or nothing after it is kept. The great art, and it is only acquired by much experience and not a few failures, is to gather each variety at the proper moment for keeping as well as for perfection of quality.—D. T. FISH.

Trees and Shrubs.

This is a suitable time for inserting cuttings of evergreen and deciduous shrubs, such as Laurels, evergreen Privets, and striped-leaved Yews; also for collecting Acorns of different sorts, and seeds, as they ripen, of Sycamore, Birch, and other forest and ornamental trees and shrubs. Spread them out in an airy shed or loft to dry, when they may be stored away in bags or kept in heaps under cover until spring. Birch seeds may, with advantage, be mixed with sand slightly damp, and should be occasionally turned. The same may be done with the fruit or seeds of the Arbutus or Strawberry tree, the fruit of the various species of Berberry, common and Portugal Laurels, Hollies, Privets, and Yews—all of which should be sown in beds about the end of February or early in March. Haws, or the fruit of the common Hawthorn (*Crataegus oxyacantha*), should now be collected; and, after having been well mixed with sand, should be stored in clumps or pits for the next twelve months, and those thus treated about this time last year should now be sown in drills about 2 feet apart, and about 2, or not exceeding 3, inches deep, selecting for this purpose a piece of land which had been well manured during last winter or spring, and which had since borne a crop of some kind of vegetables, such as Potatoes or Cabbages, which would leave the land in excellent condition for this crop without further enriching. Transplant evergreen shrubs, &c., in the nursery, as soon after this time as possible, giving space for their further development by increasing the width between the lines as well as the distance from plant to plant. Trees and shrubs of all sorts while in the nursery should invariably be transplanted every autumn in order to induce, as much as possible, the formation of a compact ball of fibrous roots, and to this end all long or straggling roots should be cut back annually, so that the final transplantation may be effected with little risk of failure, and without giving an injurious check to the plants.—P. G.

Kitchen Garden.

If there is any doubt about the supply of Parsley being sufficient for the anticipated demand, there is yet time to transplant roots from the open ground into pots or boxes for use in January and February; and, even where there is an abundant supply well protected in the open air, it is always advisable to have some growing under glass for garnishing, as the leaves are usually fresher than can be obtained outside, especially during or after severe weather. It is generally after Christmas that this want is felt; therefore, there is yet time, if it is necessary, to add to the stock under cover. In the winter, when all space under glass has to be made the most of, a saving of room may be effected by growing Parsley as pyramids in 13-inch pots, as a very large amount of produce can be obtained from a limited space in this way. I have mentioned 13-inch pots because that is a handy size for moving, but larger or smaller pots would

do equally well, only very large pots would be rather heavy and clumsy to move about. Building up pyramids of Parsley is a very simple operation; first, take up a lot of strong Parsley roots, cut off all the large leaves, as it is the young growth that is wanted, and, in any case, the check in moving would cause most of the old leaves to drop. Then, having roughly drained the pots, fill them up level with good rich soil rammed well in to prevent settling. Ten stakes, about as thick as one's forefinger, will be required for each pot, and they must be inserted at equal distances firmly in the soil, close to the edge of the pot; five of the stakes should be cut to 2 feet above the pot, and the remaining five to 18 inches, leaving a short and a long one alternately. A small wire ring, 3 inches in diameter, will hold the sticks firmly together at the top, and a wire run round at the top of the short stakes, passing it round the end of each stake, and drawing it tight, will make a sufficiently strong framework for our purpose. Commence building up the pyramid by laying a row of plants horizontally at the top of the pot all round; the strength of the plants will furnish a guide as to the space each should occupy, but the strongest plants should be used in the bottom, reserving the smaller ones for filling in towards the top. Having thus placed the first row, fill in a layer of soil, pressing it down firmly; then another row of plants, and so on until the top is reached—when, to finish the pyramid off, finally place one large plant inside the wire ring at the top. For keeping up the soil, as the work proceeds, I prefer straw to hay-bands, as the latter, from their closer nature, encourages moisture to remain too much round the crowns of the plants. When all is completed, if there are any small cracks where the soil can run out, they should be rammed full of Moss. They may be supplied with water when necessary, and may remain in the open air for the present. An orchard-house, or some place where frost is only just kept out, will be the best place for them during winter. Thin out all late Turnips and Spinach, the latter to 3 inches apart, and the former to 1 foot. All winter crops are now growing rapidly. Thinning and hoeing must, therefore, not be neglected; weeds, too, are feeling the effect of the present genial weather, and are coming up in quantities, and prompt attention must be paid to prevent them from seeding and causing trouble in the future. Proceed with earthing up Celery as required, banking up the successive crops well to throw off rains. Whenever there is any danger of frost occurring, see that Cauliflowers just coming in are sufficiently protected. The leaves tied closely over the flowers will probably be sufficient protection for the present, and it will also tend to keep them white and close. Veitch's Autumn Giant, in my opinion, is the very best Cauliflower grown, not only in the autumn, but for all seasons, except for forcing or very early work. British Queen and Ne Plus Ultra are the two best late Peas this year with us. We have gathered almost daily from these since the 1st of August, and shall continue doing so till frost cuts them off, as they are still full of flowers and young pods. The dwarf early kinds from the July sowings have also done well; but they lack the perpetual-bearing habit of the two sorts just mentioned, and the pods are small. Peas of the Ringleader or Dwarf Gem sections may be sown rather thickly in boxes; the young tops will be found useful for flavouring soups, &c., when Peas cannot any longer be gathered from the open ground. —E. HOBDAV.

Cottagers' Gardens.

The fine growing weather which we are now experiencing will have a marked effect on the growth of all kinds of green crops. Broccoli and Winter Greens will, therefore, make rapid progress, and will require frequent surface stirrings to keep down weeds, which are always difficult to eradicate in autumn. A full crop of Cabbage should be got out at once. Celery should be earthed up on a dry day, for, although a semi-aquatic plant, it is apt to decay at the heart if not thoroughly dry when earthed up. Advantage should also be taken of dry breezy weather for the ingathering and storing of crops of fruit and roots for winter use. Flower borders will also require frequent attention in the way of collecting decaying leaves and in maintaining neatness and order. Chrysanthemums and Dahlias should be effectually secured from wind by means of neat stout stakes. Window plants, as the season advances, should be kept somewhat drier than they hitherto have been, and a few hardy foliage plants should be introduced. Berry-bearing Aucubas are excellent window plants, as their leaves are so easily cleared from dust, and the bright glossy-leaved *Griselinia macrophylla* well deserves a place in cottagers' windows, as its foliage may be cleaned equally well, as that of the Aucuba and its colour is a more pleasing shade of green. *Ficus elastica*, and the feathery-leaved *Acacia lophantha*, are two of the best of all foliage plants for windows during the winter months. A few bulbs, to bloom in spring, should now be potted and plunged under ashes in order to get their roots in advance of the tops, without which they seldom give satisfaction.—J. G.

THE LAMBTON CASTLE GRAPES.

WHEN, last November, we gave an engraving and a few particulars of the largest bunches of Black Hamburgs that had been recorded up to that date, we had not the most distant idea that a bunch, well nigh double the weight of it, would be produced by the same Vine this year. Such, however, is the astonishing fact; for, as many of our readers are already aware, Mr. Hunter, gardener at Lambton Castle, produced and exhibited, at the Belfast International Show last August, a bunch of Black Hamburg Grapes weighing 21 pounds 12 ounces—not 20 pounds 12 ounces, as reported in the GARDEN. We think we must be correct in saying that this is the most extraordinary production in the way of fruit that has been recorded in the annals of horticulture, outdistancing very far those large bunches of the large and coarse-growing Syrian Grape grown by Speechly, Dickson, Fowler, and others, the heaviest of which weighed a trifle over 20 pounds. Among other most remarkable products may be classed two or three Providence Pine Apples grown at Gunnersbury Park, by Mr. Mills, which weighed 15 pounds each—a feat in Pine growing which may now be considered eclipsed by the 8 pound Queens and 11 pound Smooth Cayenne Pines grown by the late Mr. Ingram (Frogmore) and Mr. Sandford (gardener to the Earl of Bective), whose Queen at Manchester last year was 8 pounds 4 ounces—more remarkable, to our mind, than a 15 pound Providence, especially when each plant had the whole of one light of a pit and a cartload of soil to grow in. The Lambton Castle bunch of Raisin de Calabria—not Foster's White Seedling, as reported in the *Gardeners' Chronicle*, weighing 15 pounds, was also a very remarkable production, quite on a par with a 20 pound Syrian. It will, no doubt, be supposed that these bunches, and especially the Black Hamburg, were the only bunches produced by the Vines which bore them; a note of the facts connected with these Vines is therefore quite worthy of a place in garden literature. The Vine which bore the Black Hamburg bunch was struck from an eye in 1869. It was cropped the second year after planting it, and bore six bunches, one of which Mr. Hunter staged in his first prize collection of eight bunches in 1872. In 1873 it bore eight bunches, one of which, weighing 13 pounds 4 ounces, was the heaviest of any black Grape shown at the Manchester International in 1873; the smallest of the other seven bunches weighed 4 pounds. This year, besides the monster bunch in question, the same Vine bore five bunches; and within 2 feet of the great bunch hung one of most beautiful symmetry, weighing 11 pounds 2 ounces—the remaining four bunches weighing 13 pounds 13 ounces. We had the pleasure of inspecting this remarkable Vine a few days before the Belfast show, and considered the 11 pounds bunch the most lovely bunch of Black Hamburg we had ever seen. It was on a par with the Glamis Castle Black Hamburg as regards quality. Here we have a Vine bearing six bunches, of the aggregate weight of within a few ounces of 47 pounds—nearly 25 pounds weight of Grapes, besides the one bunch that turned the scales at a stone and a half!! If this is an accident—as the *Gardeners' Chronicle* has it—it is one which it does not require a lens to see! These are not the only remarkable Grapes we inspected in the same house. The Vine that bore the Raisin de Calabria had other five bunches scarcely less than the 15 pounder; and there were very large Muscats; immense Trebbiana, from 10 to 12 pounds, we should say—after guessing within nearly a pound of the two celebrities; Foster's Seedling, of immense size and splendid quality; and Gros Guillaume, certainly not less than 14 to 16 pounds,—and these facts increase the astonishing nature of the accident! If these productions are accident, then so were the 15 pounds Providence Pines, the 8 pound 4 ounce Queens, &c. It would be easy to indulge in many reflections regarding these monster bunches—not referring to the giant one at all. We might not be so facetious as a gardener who pulled Mr. Hunter aside at Belfast, and asked, "How many Vines he had buckled on to the production of that bunch;" or concoct, for a moment, the idea of its being the production of many bunches grafted together when young. All such speculations and reflections are entirely unprofitable. A more practical question lies in asking if there is anything remarkable in such herculean work on the part of a whole house of Vines. As to soil, it is the same sort that had been used for Vines for years before these Vines were planted. The soil is a strong holding soil; the Vines are grown at somewhat between 3 and 4 feet apart, up a long rafter of a 22 feet wide lean-to Vinery. The Vines are allowed to carry a very full complement of lateral growth and foliage, are very copiously watered and fed, and are remarkably strong and thick in the bole for their age. It is useless to suppose that as these Vines get older they will continue to bear such large bunches; but, fine as they are in berry now, we predict, if nothing happen to them, that they will improve in size of berry if they decrease in size of bunch—and that can hardly be said to be progress in a wrong direction. A strong holding soil, well drained, is the soil for sustaining Vines in a condition to bear really good Grapes over a long series of years. We

remember being out on a tour of gardens some years ago, and of seeing Vines growing in many Vineries, over more than a dozen shires, and invariably found the finest Vines and Grapes where they were growing in strong holding soil, well drained. On light gravelly or sandy soils they will do wonders while the fibre of the turf of the border is decomposing; but when that goes, the Vines go too, and nothing but fresh supplies can keep them in stamina. On the other hand, in heavier loams, when the fibre is gone, they do not so much miss it, and with rich top-dressing they go on for generations, it may be, bearing fine Grapes. We would instance one case, and that is the Black Hamburgh and Muscat Vines at Wishaw House—growing apparently in clay, well-drained, bearing splendid quality of Grapes for, we should think, well nigh forty years now—during which time many Vines in light soils have been a mere flash in the pan, to be grubbed out in due time. Instead of over-draining in such light soils, or of aerating underneath, it would be much better for the Vines to keep all air from the border, except that which finds its way by ordinary pressure, and to mix some clay with the soil, if such could be had. Time is a wonderful revealer of secrets in Vine-growing, as in everything else. Since writing the foregoing, we are enabled to quote from the *Gardeners' Chronicle* the following charitable (?) solution of the mystery of giant productions:—

GIANT BUNCHES OF GRAPES.—I was told the other day by a first-class gardener that these huge and ungainly monstrosities could be produced by the grafting of bunches on to the stem or shoulder of the one to be the future giant. Is this so? and, if so, will it not account for the appearance of these remarkable, but scarcely useful, productions?—POMONA. [We have recently heard the same thing, and intend to have the experiment tried another year.—*Eds. Gardeners' Chronicle.*]

Any such unworthy suspicions against the Speechlys, Fowlers, Dicksons, and Hunters, of large Grape notoriety, we consider to be utterly unworthy the countenance of our contemporary, who owes vastly more to practical gardeners than they owe to it. That any one should, to say nothing worse of it, be silly enough to raise such suspicions against these exhibitors is, to our mind, most reprehensible. Does "Pomona" and our contemporary suppose that men such as Mr. Fowler, Mr. Dickson, and Mr. Hunter, surrounded by a number of assistants—who are cognisant of their masters' every movement in the garden—would run the risk of being detected in such deceptive trickery, supposing them capable of it? This, we admit, is taking the lowest view of the integrity of such men, who will never be suspected of any such deceptions by those who know them thoroughly; and the *Gardeners' Chronicle* should never have allowed any such suspicions to have soiled its pages. Disgraceful things have been said of gardeners on many occasions, since the time that Mr. Mills grew the monster Pine Apples until now; and we, for one, protest against such conduct towards a class which, we hesitate not to say, numbers in its ranks as large a proportion of men who would not be guilty of such an immoral manner of winning a prize as are to be found in any other. No gardener will say, nor do their growers pretend, that these monster bunches are so useful as they are rare and wonderful; but prizes are offered for them at International Shows, and those who countenance the offering of such prizes should behave more charitably towards the winners of them, and not class them, by suspicion, among the base and dishonest.—*The Gardener.*

FLOWERS USED AT FUNERALS.

SIR RICHARD STEELE, in his play of the "Funeral," makes the undertaker, *Sable*, thus upbraid his servant, who it appears usually acted as a mute—"Look, yonder, that hale, well-looking puppy! You ungrateful scoundrel; did I not pity you, take you out of a great man's service, and show you the pleasure of receiving wages? Did I not give you ten, then to fifteen, now, twenty shillings a-week, to be sorrowful? And the more I give you, I think the gladder you are!" What a satire on our wretched customs! for it is hardly possible to conceive anything more unbecoming, tasteless, and unpleasant, than our present way of burying our dead. How often are the scanty resources of a bereaved family, taxed to the uttermost to pay for what is not only most unnecessary, but repulsive, to all persons of true feeling? But I would fain hope that we are losing our taste for mutes, hearses, feathers, palls, and the rest of the ghastly paraphernalia with which it has been our wont to flout the calm majesty of death. Would that we could at once, and for ever, cast them aside, and try to render our funerals graceful and becoming. This is not impossible; Nature is a great consoler; let us consult her, and, above all, use as decorations her lavish gifts of flowers. I have often observed how wisely they are employed in this way in Germany. Not many years ago, I joined the long procession of relatives and friends who followed a celebrated physician, to his last resting-place in a lovely cemetery near Heidelberg. There was little outward

sign of mourning, but the coffin, conveyed in an open car, was literally covered with wreaths of white flowers—Christmas Roses and Snowdrops for the most part, as it was in December.

The other day I witnessed the funeral of an old friend in one of our northern counties. The coffin, covered by no hideous pall, was adorned by three chaplets, one pure white (*Stephanotis*), one, of which the foundation was sprigs of Bay, was made of crimson Roses, the other white and yellow Roses with Lilies, also entwined with Bay; the cross at the head was of crimson Roses. I had an opportunity of carefully examining the wreaths, they were composed of strong wire which was first covered with dark green braid or ribbon, the flowers and branches of Bay were woven in together, the flowers being first carefully wired; the effect was most lovely. The practice of this kind of floral decoration is now becoming general; I wish it were universal. I will now mention the flowers which appear to be specially adapted for funeral wreaths. In early spring we might have *Laurustinus*, *Primroses*, *Violets*, white *Narcissus*, white and red *Hawthorn*. Then for "odorous chaplets of sweet summer buds," Roses of all colours; white and yellow *Dahlias* (when not too large) look very well. All varieties of white *Clematis* and white and yellow *Jessamine*, also *Stephanotis*, white *Geraniums*, and *Carnations*. Later on in the season, when most flowers are over and autumn's rough winds "shatter their leaves before the mellowing year," *Chrysanthemums* of all colours may be used. Christmas Roses and Holly carry us on to spring again. The Bay is almost the only suitable foliage for funeral wreaths, with the exception of the leaves of the different flowers which should be interwoven with them; it will last fresh for days if merely sprinkled with water.

I am not now writing about flowers for graves, but merely advocating the more general use of them at funerals, as one step towards an entire change in our present customs on those occasions. Time would fail me to do more than glance at the fine things which our poets and old writers have said on this subject: "Sweets to the sweet," exclaimed the Queen of Denmark, as she cast flowers on the untimely dead. "Let me be used with honour, strew me o'er with maiden flowers, that all the world may know I was a chaste wife to my grave," said the ill-fated Spanish Katharine. Spenser bewails the death of "Astrophel" (Sir Philip Sidney) in several very "doleful layes unto the time address, as fittest flowers to deck his mournful hearse."—Alluding to the well-known custom in those days of fastening valedictory poems to the hearse. He further exhorts the dainty "shepherd lasses" of Elizabeth's Arcadian court:—

Instead of Girland wear sad Cypress now,
And bitter Elder broken from the bough.

Sir Thomas Overbury's "Fair and happy milkmaid's" best wish is, "that she may die in the spring-time, and have store of flowers stuck upon her winding-sheet." I cannot conclude better than by quoting the well-known words of our great Puritan poet, who thus writes of the floral honours due to his *Lycidas*:—

And call the vales and bid them hither cast
Their bells and flourrets of a thousand hues,
Throw bither all your quaint enamell'd eyes,
That on the green turf suck the honied showers,
And purple all the ground with vernal flowers,
Bring the rathe Primrose that forsaken dies,
The tufted Crow-toe and pale Jessamine,
The White Pink and the Pansy freak with jet,
The glowing Violet,
The Musk Rose and the well-attired Woodbine,
With Cowslips wan, that hang the pensive head,
And every flower that sad embroidery wears;
Bid *Amaranthus* all his beauty shed,
And *Daffadillies* fill their cups with tears,
To deck the laureat herse where *Lycid* lies.

—W. N.

How Errors are Disseminated.—"The American Aloe," says a writer in the *Christian Weekly*, "is one hundred years in getting ready to bloom," &c., all of which, to use a vulgar phrase, is "bosh;" but somebody started the story on its travels centuries ago, and those who possess the faculty of writing prettily about things of which they are profoundly ignorant have kept it a-going. Probably our correspondent of the *Christian Weekly* obtained his information from some other equally unreliable source, and thousands of children will read his story, and repeat it in after years, believing it to be true, and thus errors are disseminated.

OBITUARY.

WE have to announce the death of Mr. Masters, of Canterbury, which took place on the 26th ult., at the ripe old age of seventy-eight. As a nurseryman he was long and well known, and the valuable collection which he formed in the Canterbury nursery is illustrated by a reference to the "*Hortus Cantabrigiensiensis*," which he published.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE BEST CONIFERS FOR BRITAIN.

THE Larch is, I am afraid, doomed. The disease goes on extending its ravages and increasing in malignity; at first, it did not show itself in young trees, which, until they had reached the age of twenty, or even thirty, years, were spared; but this immunity is no longer extended to them. Now even newly-planted trees, trees still in the nursery, are attacked by it, and I lately observed plantations of four or five years old dying off wholesale. The present year, indeed, seems to have been peculiarly favourable to the development of the Larch disease, and I may note, in passing, that it has been an unusually dry one. Various circumstances, indeed, seem to indicate that drought has much to do with the disease. Both the Spruce Fir and the Larch, as well as *Pinus excelsa*, all of which suffer from disease, come from more rainy countries than ours, and it is possible that owing to the system of excessive drainage which has, during the last sixty years, been carried to such an extent in this country (and more especially in Scotland, the focus of the disease), our climate has undergone such a change that these trees are unable to thrive in it. There are, I think, facts and considerations which support this view, and if that be so, there seems every prospect that we shall lose both the Larch and the Spruce Fir, and any other tree for whose constitution drainage has rendered our climate unfit. Even, however, should the worst come to the worst, it is more than probable that there will always be a certain demand for both Spruce Fir and Larch for cultivation in exceptionally favourable (rainy) situations. That rainy situations are better suited to these trees than others is tolerably clear; for it was in the eastern and drier parts of Scotland that the disease first appeared; it was only gradually that it proceeded to the more humid west; and even now we are told that it is scarcely known in rainy Ireland. If the Larch and Spruce Fir both fail us, what are we to put in their places? This must be answered alternatively. If we suppose that the disease which is killing them proceeds in any respect from unsuitable climate, we must proceed to fill up their places in a different way from what we might do if we had not to take the climate into consideration. If the climate is the cause, we must avoid that of the suffering trees, and look out for the denizen of a climate more like our own. If the climate is not the cause, then there can be no objection to taking a substitute, say for the Larch, from a climate similar to that of the native country of that tree. All that we have to do is to pick out the nearest approach to it in grace, beauty, and other properties. In such a case, for the Larch, we should prefer the Deodar. We might, indeed, take the Siberian or North American Larch (*Larix sibirica* or *L. pendula*), which we have not seen attacked by the disease, but our experience on that point is not worth much, for these Larches have not been planted out in Britain in sufficient quantities to allow anyone to generalise respecting them; and even, although they should prove disease-proof, they have neither the beauty nor the elegance of their European relative. The Deodar has both, and much of its peculiar style, and, although its timber is not equal to that of the Larch, it has special excellencies of its own. We have now abundant materials by which to judge of its merits, whether as a single tree, or in avenues, or in masses, and in all it compels our homage; but we do not think anyone can fully appreciate its beauty who has not seen it grown in masses. This may be seen in the New Forest, in the south, and at Riccarton, near Edinburgh, in the north, besides, no doubt, many other places that do not occur to us at the moment. But, suppose that, in course of time, the Deodar should fail too, what tree should we then select in its place? The experience which we have been accumulating during the last fifty years enables us to answer without hesitation, the Douglas Fir—which, with a good deal of the density of foliage of the

Spruce, combines much of the grace and elegance of the Larch—and has a timber as valuable as that of either; besides special beauties, and other valuable properties peculiar to itself. Its range extends from Mexico to Vancouver's Island, and from the Pacific to the Rocky Mountains. It grows, at one place, in a climate as moist as that of the Himalayas, and, in another, almost as dry as that of Egypt—here in a tropical heat, there among Arctic snows. Its habit and its timber vary according to locality, and it seems to thrive in all, although not equally luxuriantly or to reach the same dimensions in all. In British Columbia it reaches 300 feet in height, while in the Rocky Mountains and in Mexico it does not exceed 90 feet in height. In British Columbia, its timber is springy and elastic. In the Rocky Mountains it is hard, resiny, and liable to warp—all indicating the possession of the power of adaptation and accommodation to circumstances, with the capacity of modifying its character to suit them. It has shown this power in Britain already. No sooner grown here than it has thrown off the straight and stiff erectness which characterises it in its native forests. Instead of continuing here, as it might naturally have been expected to do, *roide comme une Anglaise*, as our neighbours accuse our ladies of being, it has thrown out its arms and taken an attitude as free as that of a Hercules. It is, in short, a tree formed by Nature for meeting such a difficulty as the failure of the Larch presents, and standing, as it does (so far as appearance goes), mid-way between the Larch and Spruce—it may well be taken as a substitute for both. Next to this Fir, whether as a substitute for the Larch and Spruce, or as independent trees worthy of cultivation in the future, we place in the first rank the Hemlock Spruces, including under that name the Hemlock of the Eastern States of America and those of the Western, viz., *Abies Albertiana*, *A. Hookeriana*, and *A. Pattoniana*, of which last we spoke lately; also *A. Tsuga*, for large scrub-work; the others for trees. Among the Spruces *Abies Menziesii*, *A. Pichta*, and, if we could rely upon it, *A. Morinda*, but we fear, although it has been doing very well since 1860, a similar winter may prove too much for it in many places. Of Silvers we prefer (besides our European, *Picea pectinata*), *P. nobilis*, *P. magnifica*, *P. amabilis*, and *P. grandis*, under which head we include *P. Lowiana* and *P. lasiocarpa* as synonyms, on the strength of the variation in leaf and habit which we have seen in *grandis* in its native habitats. *P. cephalonica* seems to do better than *P. pinsapo*; but we can spare neither, and we have been surprised to see how well *cephalonica* does in cold districts and high elevations. *P. Webbiana* and *P. Pindrow* (whether they be distinct species or varieties of each other, as we believe them only to be), are so beautiful and so magnificent that, even although we should lose them every few years, we would keep on planting them again and again. Of Firs, the staple, after the Scotch Fir, is *P. austriaca*, the merits of which is now generally known, and *P. Pinaster*, for sandy places; *P. contorta*, from California, is also a fine tree. Of the Cembras, the most promising, after the European species, is the new one from Japan, introduced some few years ago by Mr. J. G. Veitch, and called *P. Koraiensis*; it appears to be the same as *P. parviflora*, although the figures of the cones, published by Siebold, look very distinct, but the one is figured open and the other shut, which may be the explanation of this; but we have lately seen *Koraiensis* in cone in the nursery of Messrs. Turnbull, at Perth, and the cone which that plant bears is identical with Siebold's figure of *parviflora*. Its leaf has a beautiful white silvery side, which gives it almost a variegated appearance, and as it seems hardy it will come in well with any of the dark Firs, such as the European Cembra or *austriaca*, or the Scotch Fir. We might pass over the Pines having leaves three in a sheath, without notice, were it not for *Pinus ponderosa*, which was the tree which struck us more than any other in California. The trunk becomes an immense solid Ionian pillar, almost as big at the top, 100 feet up, as at the bottom, and its diameter is often from 6 to 8 feet; lying on the ground it is an insuperable obstacle—nothing can get over it, and it is often felled in California in a continuous row, one after another, to serve as a fence. This has already been recognised as synonymous with *P. Benthamiana*, *P. Craigana*, *P. Beardsleyi*, *P. Sinclairiana*, &c., but we must also add *P. Jeffreyi* as a synonym. *P. ponderosa* and *P. Jeffreyi*

grow in adjoining districts, and the one passes into the other, that is, is intermixed with it, and the only difference that we could see was the size of the cone, and that the bark of P. Jeffreyi had a redder hue than the variety with the smaller cone. It grows very well in this country in the south of England, and it is most desirable that it should grow well everywhere. None of the pseudo-Strobi seem adapted for this country. We are rather disappointed with the progress of the different species introduced a few years ago from Japan. The most remarkable, the Umbrella Pine (*Sciadopitys verticillata*), is excessively slow in growth. We have scarcely left ourselves space to touch on the Cypresses; we shall only say of those introduced within the last few years that *Cupressus Lawsoniana* comes first in our estimation; *Thuja gigantea* (Lobbii), second, and *Libocedrus decurrens* and *Thujopsis borealis*, third. We should have placed *Wellingtonia gigantea* and the red-wood *Sequoia sempervirens* higher, but we have doubts whether they will ever do thoroughly well with us. This is a point still *sub judice*, and there is sufficient encouragement to warrant everyone in trying them, but not in trusting absolutely to them. In some parts of the kingdom the Monterey Cypress (*Cupressus Lambertiana* and *macrocarpa*) has continued to do well, notwithstanding the slaughter of it that took place in 1860 and 1866, in what might have been supposed to be the mildest regions. It possesses such beauty, and grows so rapidly, that we would put it in the front rank if we could only depend upon it.

A. M.

TWO HUNTINGDONSHIRE GARDENS.

Hinchingsbrook.

THIS noble and spacious mansion, so rich in historical associations, is supposed to have been built by one of the ancestors of Oliver Cromwell on the site of an ancient nunnery, in the reign of Henry VIII. James I. when on his journey from Scotland to London, to take possession of the crown, made Hinchingsbrook one of his resting places, and was so lavishly entertained by Sir Oliver Cromwell (uncle and godfather of the "Protector"), that the king is reported to have said at parting "Merry mon, thou hast treated me better than any one syn I left Edinbro." It remained in possession of the Cromwell family till 1627, when it was purchased by Sir Sidney Montague, the father of the first Earl of Sandwich, a noble family, in whose possession it still continues. The date 1602 is on the south front of the mansion, but the northern part of the building appears much more ancient, and is richly adorned with beautifully executed ornamental work. The grounds on the southern and western fronts are somewhat extensive, and well varied; but the chief glories of Hinchingsbrook are its grand old trees. Standing in the pathway, south of the mansion, and looking westward, across the wide expanse of smooth closely-shaven green turf, the eye takes in at a glance one of the prettiest tree pictures it is possible to imagine. In the foreground are several grand old Cedars of Lebanon, with their lower branches sweeping the turf; a little in the rear of these, but towering above them, is a fine purple Beech; whilst the background is filled in with monster Elms, Limes, and Oaks—grand old remnants of the past, associating fitly with a mansion that dates back for centuries. A small flower garden, of simple but tasteful design, is cut out on the Grass in front of the drawing-room, and this is kept gay in summer with the usual kinds of bedding plants; and, when the beds are cleared in autumn, they are planted with bulbs and other spring-flowering plants. Ascending a flight of stone steps, a terrace walk is reached, supported by an Ivy-clad parapet wall, from which magnificent views are obtained of the river Ouse, meandering like a silver thread through the broad green valley; and, away beyond, the view extends for miles over gently rising ground, forming as pretty a picture of English pastoral scenery as could anywhere be met with. About the centre of the terrace is an ancient sun-dial, said to have been set by the celebrated navigator, Captain Cook. Descending from the terrace, and passing round the western side of the mansion, a delightful peep is obtained through a vista in the shrubberies away through the dressed ground to a walk called the Walnut-tree Walk, in the distance. The conservatory, an ornamental structure with ridge and furrow roof, stands back from the mansion, on a platform or terrace, with a flower garden in front of somewhat intricate design on gravel. A broad central path intersects the garden in the centre, dividing it into two equal portions; and another path runs round the outside. There is also a broad verge of turf on each side of this path, with standard Roses planted at short intervals, and the whole is bounded by climbing Roses, trained to iron supports, and festooned between the uprights. The conservatory is in three divisions; the eastern

one is filled with Ferns, amongst which we remarked several plants of the Bird's-nest Fern, and good representatives of the genera *Adiantum*, *Pteris*, *Blechnum*, &c. In the central division is a fine India-rubber plant, the head of which is about 12 feet in diameter. The western division is filled with a mixed collection of flowering plants. After passing one or two isolated flower gardens, a fine old Beech, standing on the open lawn, and measuring upwards of 20 feet in circumference at 4 feet from the ground, arrests attention. It appears to have met with some injury in its youth, for, about 5 feet from the ground, it has branched into four leaders, each as large as a good-sized tree, and which rise almost perpendicularly, making its top, as one glances upwards, like a thicket of branches. Here are also several fine old Scotch Firs, and one or two handsome young trees of *Wellingtonia gigantea*, which appear to thrive well in the neighbourhood of Huntingdon. Altogether, the grounds at Hinchingsbrook are very tastefully laid out. There is a good breadth of turf near the mansion, free from that senseless dotting about of trees or flower-beds which too often disfigure even good gardens. The kitchen garden contains about 4 acres within the walls, and is well stocked with fruit trees and vegetables. On the lower side of the garden is a range of lean-to houses devoted to Grapes, Peaches, &c. There is also a span-roofed stove. The park, which is of moderate extent, contains some noble old Elms and Limes.

Cromwell House.

This, the birthplace of Oliver Cromwell, will always possess interest of no ordinary kind to the student of history. It has, probably, however, been partly, if not altogether, rebuilt since it was sold by the Cromwell family in 1631. It is now a square Grecian structure, overlooking small but pretty grounds, in the midst of which stand the remains of an old wall thickly covered with Ivy, probably all that is left of some grand old building. The charm of this place consists in its historical associations, and in the quaint pleasing way in which the grounds are laid out; although the modern system of ribbon borders and bedding-out is introduced and well managed, there are also here and there delightful little bits of picturesque planting with such materials as Yuccas, and other hardy plants; and, near the boundary path, are retired shady nooks planted with choice collections of hardy Ferns. Roses, Rhododendrons, and shrubs of all kinds appear to thrive well here. The glass erections are not numerous, but Grapes and greenhouse plants are well grown. There is a walk leading through the kitchen garden with a border on each side, in which are planted standard Roses, Pæonies, and many old-fashioned hardy plants which are interesting at all seasons.

E. HOBDAV.

Public Park for Reigate.—Lord Somers has just presented to Reigate, in the shape of a lease to the Mayor and Corporation for 999 years, at a nominal rent, several acres of land, immediately adjoining and overlooking the main street, as a pleasure and recreation ground for the inhabitants. Formerly the place was a sort of wilderness, a receptacle for all kinds of rubbish. To rid the town of what was regarded as a public nuisance, Mr. Wilson Saunders and a few others having obtained the necessary legal sanction from Lord Somers, converted the place into a delightful pleasure ground, with pretty walks and many flower-beds and seats beneath the shade of ancient Elms. In this transformed condition it has now been handed over to the Corporation, to be maintained and kept in order out of the municipal rates. The Castle Grounds, for such they are called, possess special interest as being the site of the ancient fortified Castle of Reigate, said by Aubrey to have been built anterior to the Conquest, and supposed to have been chosen by the Romans to guard the old line of communication to Croydon. The structure has now completely vanished, its demolition having been nearly accomplished during the Civil Wars, and the only relic of it is a barbican, built out of the ruins about one hundred years ago. The Castle court now forms the higher and principal part of the pleasure ground, and from it is to be seen one of the most picturesque landscapes in Surrey. There is an uninterrupted view down the valley to Dorking, with the grand chain of hills on the north side; and, looking southward, the houses and streets below, backed by the high straight ridge of Lord Somers' park beyond, present an unusual appearance. Under the pleasure grounds run some extensive caves, hollowed out of the solid sand-rock with remarkable accuracy, and supposed to have been contemporaneous with the castle. The principal cave is called the Baron's Cave, the tradition being that the confederate nobles here first debated upon and arranged the terms of Magna Charta. A massive flight of stone steps, supposed to have led up from the caves into the castle, still remains, and a part of the old moat is now included in the new pleasure ground. The estimated cost of keeping the place in order is less than £200 a year.

NEW ERYNGIUMS.

PROBABLY no genus of plants among Dicotyledons presents among its species more diversity of form than the Eryngiums, a genus which has almost as many representatives in the Old World as in the New. Among the foliage alone, indeed, there is great dissimilarity, some varieties having perfectly entire and smooth leaves, others lacinated and waved ones, and between these there are all sorts of intermediate forms; the most extraordinary form, however, is that which is peculiar to a group of species belonging exclusively to America, and particularly to Brazil, the Argentine Republic, and Mexico. These are characterised by simple linear leaves, elongated, and with parallel veins, such as are ordinarily found only in Monocotyledons. It is to some of these latter that we now propose to direct attention. The genus Eryngium is represented in our gardens by a number of European and Oriental species, all remarkable for their blue or amethyst tint, a colour which extends to the divisions of the involucre, and even to the flowers themselves. Among them, one of the most singular is *E. alpinum*, from the elevated meadows of the Jura, of Provence, and of the Dauphinian Alps, but it is a plant rarely found in cultivation, where under this name one more often meets with *E. planum*, of the mountains of Austria, a hardy

*Eryngium Lasseauxii.*

species widely diffused in botanic gardens. It is, besides, rather ornamental, and though less elegant than *E. alpinum*, would, nevertheless, be a good addition to our gardens. The two Eryngiums, however, which are most frequently met with in cultivation are, *E. amethystinum*, from the dry districts of Croatia and Dalmatia, and *E. cœruleum*, which grows in Asia Minor in the Caucasus and Lebanon. Both these have blue flowers, and the same colour also invests the involucre and the upper extremities of the stalks. Another very pretty species also, is *E. Oliverianum*, which is sometimes in cultivation under the name of *E. alpinum*. The Sea Holly (*E. maritimum*), from the shores of the Atlantic and Mediterranean, forms a fine contrast with surrounding plants; and, lastly, there is *E. giganteum*, a tall species from the mountainous regions of Armenia and of Iberia, which deserves to be more extensively known than it is. Some dozen years ago, these were the only species of Eryngiums which we had; all of them have leaves more or less entire or divided, and in this respect are different from those to which we are now about to direct attention, and which have linear leaves traversed by parallel veins, somewhat resembling Bromeliads. Of this class are the three following, viz., *E. aquaticum* (*E. Yuccæfolium*), from Pennsylvania and Virginia; *E. paniculatum*, originally from Brazil, and frequently cultivated under the name of *E. Bromeliæfolium*; and

lastly, the true *E. Bromeliæfolium*, from the humid forests of Mexico. But of all the long narrow-leaved kinds, none equals some raised from seeds sent to Paris some years ago by M. Lasseaux. These seeds, which were sown immediately, soon germinated, and the young plants obtained from them soon developed their true character. Three years afterwards many of them flowered, and were successively described by M. Decaisne, who recognised, besides *E. pandanifolium* and *ebracteatum*, three new species, viz., *E. Lasseauxii*, *eburneum*, and *platyphyllum*. *E. Lasseauxii* differs from *E. pandanifolium*, which it much resembles in foliage, inasmuch as it is more upright and glaucous underneath, but, above all, by its flowers being whitish, instead of being of a reddish, violet. The most remarkable kinds are *E. Lasseauxii*, *pandanifolium*, and *eburneum*; *E. platyphyllum*, characterised by its large leaves, spread in a rosette upon the soil, might yet, if its foliage were more abundant, be classed among the preceding. As to *E. ebracteatum*, whose inflorescence resembles that of some *Sanguisorbas*, if it cannot, on account of the smallness of its straight leaves and the sharpness of its stem, be added to them, it yet carries a certain amount of interest with it on account of its singularity.

These plants are not hardy in the climate of Paris, and are only able to withstand the winter when protected. In the south of France Eryngiums acquire large dimensions. In the west, too, they are decidedly hardy, and in the botanic gardens at Brest, there was formerly a specimen of *E. pandanifolium* the stems of which, when in bloom, were at least 16 feet in height. They are easily increased either by means of seeds or by the splitting up of adult specimens. In the first case, the seeds, which are produced in abundance about Paris, are sown as soon as gathered in pots or in pans, which are placed in frames. In the second case the operation is performed either in spring or summer; each shoot, if rooted, is placed separately in a pot, and either set out-of-doors or placed in a cold frame. When large enough they are planted on the lawn, either separately or in masses, and in either case produce a grand effect.—*Revue Horticole*. [We were very much struck with the fine and singular aspect of some of these noble Eryngiums, when at the Garden of Plants last spring. There they seem to stand the winter with a good bed of litter round the base of the stems. Doubtless, they would do well in our southern counties. In any case the species figured above, and some of the other kinds are worthy of a place in gardens.]

A New Station for Mackay's Heath (*Erica Mackayana*).

—Hitherto this rare Heath has been observed only in the vicinity of Craiggamore Hill, and thence westward along the road leading to Clifden. It will, therefore, be interesting to record a second Irish locality, which is situated about eight miles to the south of Craiggamore. On August 31st I found *Erica Mackayana*, in its most typical form, growing in moderate abundance a little east of the newly-built police barrack at Carna. Here it grows in fair quantity along with the mountain heath on the way to Lough Sheedagh, and is, as usual, associated with *Erica Tetralix*. On the same ground I gathered some of the forms which appear intermediate between *E. Mackayana* and *E. Tetralix*, and which seem to give some reason for uniting the two plants. These intermediates are much more plentiful about Craiggamore and are very variable, forming, as it seems to me, a nearly complete series from *E. Tetralix* to *E. Mackayana*.—A. G. MOORE, in *Journal of Botany*.

Cattle Poisoned by Meadow Saffron.—The appearance of a mysterious disease caused great alarm and much loss recently, in Kilbride, in the district of Ballinrobe, Co. Mayo, where not less than twenty-three head of cattle belonging to six or seven small farmers, succumbed to the narcotic effect of the alkaloid principle of Colchica, in which Meadow Saffron (*Colchicum autumnale*) abounds. When the mortality began to assume serious dimensions, it was feared by the people in the locality that an epizootic disease had visited them. The mysterious disease was at once unveiled by a member of the efficient staff of Veterinary Inspectors attached to the Governmental Department of Cattle Inspection, instituted to carry out the provisions of the Contagious Cattle Disease Act. That gentleman, on examining the symptoms of the disease, looked for the cause, and found it in the abundance of the above weeds growing in pastures. A decoction of this plant is used medicinally to allay the pangs of neuralgia, gout, and rheumatism, by external application. The seeds and bulbs contain most of the acrid principle, and it is, therefore, when in a state of perfection, the plant is most noxious.

A New Application of the Marsh Mallow.—Gypsum mixed with 4 per cent. of powdered Marsh Mallow root will harden in about one hour, and can then be sawn or turned, and made into dominoes, dice, &c. With 8 per cent. of Marsh Mallow, the hardness of the mass is increased, and it can be rolled out into thin plates, and painted or polished.

NOTES OF THE WEEK.

— THE Botanic Gardens in the Regent's Park fortunately escaped the late great gunpowder explosion with the exception of the loss of a few panes of glass (in the corridor), though in Sir F. Goldsmidt's close at hand, £50 worth of glass has been broken.

— M. LINDEN, of Ghent, has founded a new establishment at Pallanza, on the shores of Lake Maggiore, in association with an able and well-known amateur, M. le Marquis della Valle de Casanosa.

— THE directors of the Alexandra Palace Company have decided to open the new palace with a grand musical performance on Saturday, the 1st of May, 1875. It is stated that the building is now rapidly advancing, and that the decorations of the interior are nearly complete.

— CO-OPERATION seems to be extending itself even to gardening. Mr. Thomas Hughes presided, it is said, the other evening at an important conference of the friends of co-operation from London and various provincial towns. The principal topic discussed was the application of the co-operative principle to market gardening.

— THE Agricultural Society of France has offered prizes of 1,000 francs each for the best method of artificial irrigation, for the best means of destroying the *Phylloxera vastatrix*, for the best economical means of utilising the Beetroot and its products, and for the educational establishment which shall have taken the best means to instruct in agriculture and horticulture.

— THE gathering of Peaches at Montreuil, in the environs of Paris, is now drawing to a close. The year has been an exceptionally good one, and the value of the crop is two millions of francs. That sum will astonish no one, when the fact is remembered that there are 600 growers at Montreuil, who raise nearly sixty millions of that fruit. For more than a month 500,000 arrive every morning at the central markets.

— MR. MEEHAN, in a recent paper, referred to some Potatoes exhibited by him, in which the stolons of a Grass had penetrated through from one side to the other, preferring, as it would seem, to go through such an obstruction to turning aside to avoid it. He lately exhibited a similar case, only the obstruction was the round smooth root of an herbaceous Peony. Though not more than one-third of an inch round, a stolon of *Triticum repens*, the common Couch Grass, had pushed itself through.

— THE Fungus meeting, held at South Kensington, on Wednesday last, was well attended, and the beautiful colours of many of the species exhibited were much admired. We have now many excellent works on the subject of Fungi, both edible and poisonous, and it is much to be regretted that knowledge amongst even educated people with respect to this interesting class of food-producing plants is so limited. Some years ago, Mr. W. G. Smith, published two valuable coloured charts of most of the common edible and poisonous species, and these ought to find a place in every school-room. Something of this kind is done in Sweden and other countries, and if the same attention was paid to such matters in this country, we would hear less of "Mushroom poisoning" than we now do.

— THE committee of inhabitants of Soho Square have decided to postpone availing themselves of Mr. Grant's offer to lay out the Square at his own expense, or to open it at all to the public until the ensuing spring. The feeling at present amongst the householders is that as Leicester Square, which is the only public garden at present open in the metropolis, has not stood the ordeal of a London winter, it is not advisable to carry out a similar experiment until this has been tested. Another objection has also been raised by a section of those interested, and that is that if Soho Square is to be, in a great measure, as Leicester Square has been through the summer, simply a place of resort for the children of the neighbourhood, who would crowd the seats and prevent those most entitled to enjoy the benefits of the improvements from so doing, under those circumstances it would be better to keep the square in its present form for the benefit of those who have a legal right to use it. That is to say, in substance, lest the poor children should play in it, rather than in the crowded and dangerous streets, let us leave it to the dead cats, and in its present deserted condition.

— INSECTS are destructive enough with us; but it is in other climes that the destruction they may bring is most seen. A lady writing from Kansas to *Moore's Rural* says:—"On the 26th of July, down came an army of those hateful grasshoppers, devouring all that was left. Our young trees, the fruit and shade we hoped some day to enjoy, as well as our hedges and shrubbery, have also fallen victims to their ravages. I fought for those plants you sent me last spring, covering them with papers, tying down as firmly as possible, but the wind would tear them off. The pests have left us twice, but are back again. An unsuccessful fight was made to save a few *Geraniums*, *Verbenas*, and similar plants." Great misery results from these visitations. When we visited Salt Lake, the principal nurseryman there had been

ruined by the grasshoppers eating all his stock; a piece of ground with cultivated crops in these arid regions is a happy feeding ground for these small pests. They, however, soon make a desert of it also."

— MESSRS. WARNE have just issued a new edition of their English translation of Alphonse Karr's "Tour round my Garden." It is well printed and illustrated, and in every way worthy of the author.

— POLYMNIA GRANDIS, a stately and noble-looking plant, of which a good figure appeared in THE GARDEN (Vol. VI., p. 145), is in superb condition in Battersea Park this season, where it seems to thrive as freely as any other plant, hardy or tender.

— WE learn from the *Illustration Horticole* that the handsome evergreen, *Torreya myristica*, is now bearing fruit—it is supposed, for the first in Europe—in the nurseries of Messrs. Thibaut & Keteleer, at Sceaux, near Paris.

— A GREAT International Show of Fruit and Flowers is to be held under the auspices of the Royal Caledonian Society in Edinburgh, on the 15th and 16th of September next year, when £700 will be offered in prizes.

— A FINE specimen of the variegated variety of Aloe-leaved Yucca, is now in flower at Mount Anville Park, near Dublin. The spike, although only half developed, measures nearly 3 feet in height, and has now expanded dozens of beautiful creamy-white flowers, forming a striking and beautiful object.

— MASSACHUSETTS papers report that a portion of Winchendon—covered with Grass, Cranberry plants, Whortleberry bushes, and over 400 trees—recently floated off into Monomoneck Lake, between Rridge, N. H., and Winchendon, Mass. The new island consists of 6 acres, and is in a lake covering an area of 2,500 acres. It was probably started from its natural site by the lake being unusually high and a strong southerly wind prevailing.

— THE *Pays de Caux* says:—"The crop of Apples in Normandy is decidedly more abundant than was supposed at the commencement of the season. The rates are not yet fixed, but some large lots have already been sold at from 1 franc 50 cents. to 1 franc 75 cents. the half hectolitre (1½ bushel) for early fruit, delivered at once. Many trees are breaking down with the weight of the crop because care has not been taken to prop up the branches.

— A BRANCH of industry which is gradually increasing in importance has arisen in late years in the barren moorlands of north-western Germany, by the preparation of peat (or turf), which is largely used as fuel in that part of Europe; and two companies have lately been formed in Oldenburg for the purpose of manufacturing peat on a large scale. The peat is cut out of the soil of the marshy moors or bogs by means of a large flat-bottomed steam-vessel, which is able to cut a canal 20 (German) feet in breadth and 6 feet in depth, whilst proceeding at the rate of from 10 to 12 feet per hour.

— THE ravages of the *Phylloxera* in the European and American Vineyards are carrying terror even to the antipodes, as may be inferred from the following official announcement:—"It is hereby notified for general information that the Governor of the Colony (Victoria), with the advice of the Executive Council, and in accordance with the provision of the Act 37 Victoria, No. 457, has prohibited the importation into Victoria of Grape Vines and Grape Vine Cuttings.—ARCHIBALD MICHE, Agent-General for Victoria. No. 8, Victoria Chambers, Westminster, October 1, 1874." The growth of the Grape and the manufacture of wine have made such progress in the Australian colonies within the last few years that it would be a pity if this source of wealth were injured.

— WE are requested to announce that the Commissioners of her Majesty's Works intend to distribute this autumn, among the poor inhabitants of London, the surplus bedding-out plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew, and the Pleasure Gardens, Hampton Court. If the clergy, school committees, and others interested will make application to the superintendent of the park nearest to their respective parishes, or to the Director of the Royal Gardens, Kew, or the Superintendent of Hampton Court Gardens, in the cases of persons residing in those neighbourhoods, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

— THE question of the best means to be employed for the conservation of woods and forests in Germany came before the foresters' congress held at Freiberg, on September 5. The importance of the subject was universally admitted, and the extraordinary influence which a scientific and systematic method of management would have on the general physical and economic relations of the people at large was fully recognised. In Germany about 18 per cent. of all the woods are in the hands of communal and parish proprietors, and only 4 or 5 per cent. in those of the Imperial Government; hence, until legislative enactments are brought to bear on this branch of landed property, no uniformity of system can be looked for. The next meeting of the congress will be held in 1875, at Hanover.

THE INDOOR GARDEN.

THE FLAMINGO PLANT.

(ANTHURIUM SCHERZERIANUM.)

OF all the species belonging to this singular genus this is, perhaps, the most strikingly beautiful. It comes from Costa Rica, and has, as most of us know, a large scarlet spathe, and a twisted spadix, which when elevated, as they are, on a tall peduncle, have a peculiar aspect, and have gained for this species the name of Flamingo plant. The accompanying illustration has been prepared from a photographic representation of one of the finest specimens of this plant to be found, perhaps,

opportunity should miss visiting his grounds, where they will see curious birds and animals, as well as plants.

Clovenfords.

WM. THOMSON.

Second-year Guernsey Lilies.—What is the proper treatment for Guernsey Lilies, after they have done blooming, to ensure their flowering again the following September?—H. LITTLEWOOD, *Stour-bridge*. [This showy autumn-flowering Amaryllid has never been very extensively cultivated in this country owing, doubtless, to the fact that, under the ordinary mode of treatment, the bulbs are of no further use after flowering; and hence a supply has to be purchased annually, incurring a considerable expense, for the bulbs have always been comparatively costly. There is, however, no good reason why



The Flamingo Plant (*Anthurium Scherzerianum*). A specimen grown by Dr. Paterson, Bridge of Allan.

in Europe, and it is also one of the best varieties of this truly useful species. It was purchased, when a small plant, by its present proprietor, Dr. Paterson, of the Bridge of Allan, from Messrs. Veitch, of Chelsea, and is now growing in the largest sized pot that is made. The compost in which it has thriven so well, consists of peat, charcoal, broken crocks, and Sphagnum. The pot is half filled with drainage. The temperature it has all along been grown in is intermediate between that of a stove and a greenhouse. Dr. Paterson is a great horticultural enthusiast, and has done much to disseminate a taste for plants, especially Orchids, in Scotland. Of the latter he is a very successful cultivator, and his advice and example have led many to form collections of these interesting plants. His stoves and greenhouses are open to all visitors, and no one who has the

necessity for these annual outlays should continue; for, with proper treatment, the bulbs will flower year after year, and produce a plentiful crop of offsets. The bulbs should be procured early in September and planted at once, say three in a 6-inch pot, using light sandy soil in a moist healthy state, and the pots should be placed in a cold frame near the glass, or on a front shelf of a greenhouse, or wherever they may be likely to receive abundance of light and air. Growth will commence at once, and the soil should be kept properly moistened, and the flower-stems supported by neat stakes. While in bloom place them in a dry, cool, airy situation, and give a liberal supply of water. When the beauty of the flowers is over, instead of starving the bulbs in the handful of soil in which they have been blossomed, as is usually done, have ready a box 12 inches deep and of a convenient size, in which to plant them in the following manner. Having first properly drained the box by placing in the bottom an

inch of broken potsherds, covered with a layer of turfy pieces of soil, and having a quantity of good, fresh, nicely broken up, sandy loam at hand, turn the bulbs out of the pots, and single them out with as little injury as possible to the few roots they may have. Plant them in rows 6 inches apart and 6 inches asunder in the rows, spreading out their roots in as natural a form as can be done, keeping the crown of the bulb about level with the surface of the soil, and this as high as the edges of the box. Give a gentle watering after planting, with a view to settle the soil, and place the box in a cold frame near the glass, or where more convenient, provided a temperature of 40° can be maintained, with plenty of air on mild days. The necessary attention during winter will be simply that required for greenhouse plants generally. Managed in this way the space occupied will not be very considerable, and it is evident that there will be ample room for the roots, and every necessary condition towards the growth and ripening of the bulbs. When the foliage shows indications of decay, which will be the case towards the middle or latter end of April, gradually discontinue water, and when the leaves die off, either take up the bulbs and store them in a dry place, or remove the box to a cool dry situation until the proper season for encouraging growth has arrived. They may be left in the box to flower, or potted in the usual manner. It will be necessary, however, to transplant every second or third year, otherwise the bulbs will be too close together, will be imperfectly matured, and, in consequence, will flower weakly.—J. S.]

THE FLOWER GARDEN.

NOTES ON BEDDING PLANTS AROUND LONDON.

My notes on bedding plants, taken in London parks and gardens, may, perhaps, be useful to others as well as to myself. Starting at the Marble Arch, Hyde Park, and turning to the left, I soon saw that *Stellaria graminea aurea* was out of place under trees, being weak and green-looking. Further along I met with a fine bed consisting of *Coleus Verschaffeltii* in the centre, and here and there, at equal distances apart, the beautiful new *Abutilon nivenum aureum maculatum* rising above the *Coleus*. In the three outer rows were *Centaurea ragusina*, *Pelargonium Crystal Palace Gem*, and *Mesembryanthemum cordifolium variegatum*, the yellow and silver colours blending charmingly together. The next bed I noticed had *Pelargonium Bonfire* in the centre, surrounded by *Verbena Sportsman*, and edged with *Stachys lanata*, altogether a bright and effective bed. A very fine mass of *Pelargonium Madame Mernier*, next caught my eye; it has a fine bright pink colour, its trusses are very large, and it is a free bloomer. Then came beds of *Pelargonium Pioneer*, bright ruby-crimson, and *Vesuvius*, a bright scarlet. Looking down the whole length of the floral border by the side of Park Lane, the effect was strikingly beautiful. One thing, however, will not bear close inspection, and that is the mud banks, to which you have often alluded; the sooner they are abolished the better. In another part of the park I saw a remarkably fine bed of *Erythrina laurifolia*, producing fine spikes of bloom, but somewhat dull in colour. A pretty *Lobelia*, named *Blue Bonnet*, round a bed, looked so like *Lustrons* that I could not see any difference between them. In what is called "The Dell," I noticed *Pelargonium Bonfire* and *Glow* in fine condition; also a pretty bed of *Pelargonium Albion Cliffs*, a white variety, mixed with a *Blue Viola*, and margined with *Mesembryanthemum cordifolium variegatum*, a combination which I considered extra good. Of the cottage, one of the prettiest little spots about London, you have given us excellent illustrations. Round its front (see p. 301) are several circles, consisting of three rings, with a *Centaurea ragusina* in the centre of each; next comes *Lobelia Blue Bonnet*, then *Alternanthera amœna*, and *Pyrethrum Golden Feather*, with a straight row of *Cineraria maritima compacta*, connecting one ring with the other; of two margins, the inside one consists of *Pyrethrum Golden Feather*, and the outer one *Echeveria glauca*; a narrow line of *Pachyphytum bracteosum* runs through the centre crossways, and the rest is filled in with *Alternanthera amœna*, *Mesembryanthemum cordifolium variegatum*, and *Alternanthera magnifica*; the two different shades of yellow in this border harmonise beautifully together. At each end is a select piece of small sub-tropical plants in the border. There is only one fault, and that is, the *Centaurea* has grown too luxuriantly. The beautiful cut-leaved *Cineraria ceratophylla* would have been in better keeping with the rest of the arrangement. In the centre, near the door-way, a half-moon bed of *Pelargonium Shakespeare* had an effective appearance, margined with rows of a bicolor *Zonal*, blue *Lobelia*, *Stellaria graminea aurea* and *Echeveria glauca*; two circular match-beds being filled, one with *Pelargonium Queen of Queens*, and the other with *P. Daybreak* mixed with blue

Viola. The next rows consisted of *Pelargonium Crystal Palace Gem*, *Alternanthera amœna*, and *Lobelia Lustrons*, margined with *Stellaria graminea aurea* and *Echeveria glauca* alternately. Both these beds were very effective, backed up, as they were, with *Pelargoniums*, *Palms*, and similar strikingly pretty plants. In front of the palace in Kensington Gardens I noticed a large bed of *Pelargonium Shakespeare*, banded with *Verbena Purple King*, and margined with *Stellaria graminea aurea*—a remarkably bright and telling combination. In the Duke of Teck's garden were several heart-shaped beds, the centres of which consisted of white-edged *Pelargoniums*, banded with *Lobelia Blue Stone* (a fine dark violet self), and margined with *Stellaria graminea aurea*. These beds were all well planted, and looked very gay. In the trial ground I noticed a fine *Pelargonium*, called *Edward Sutton*—a kind with large bold trusses, and dark crimson, but yet bright-looking, flowers.

In Battersea Park the mound of *Antennaria tomentosa* does not seem so well covered as I have seen it in former years, a circumstance doubtless attributable to the dry hot weather through which we have just passed. Here I noticed a fine plant of *Aloe mitriformis*, bearing a large bunch of scarlet flowers, much resembling those of a *Blandfordia* in shape, but smaller and more numerous. Here the double-flowered variety of *Lobelia pumila grandiflora* was a failure. The carpet beds, which were in the panelled style, were bright, well contrasted, and well planted. The centre panel, consisting of *Alternanthera paronychioides major*, had a fine orange tint, and at each end was a kind of heart-shaped panel planted with *Alternanthera amœna*, surrounded by a good belting of *Pyrethrum Golden Feather*; next came a broad piece of *Alternanthera amœna*, then a row of *Kleinia repens*, with its peculiar glaucous blue tint, the whole being margined with *Sempervivum tabulaforme* and *Sedum glaucum*. This, and a larger bed planted in the same way, were fine examples of this style of bedding. The next beds which attracted my attention were a pair of half-oblongs, as they are termed, separated by a circle; the centres of the long beds were filled with two varieties of silver-margined *Pelargoniums*, one with cerise-coloured flowers, the other with white blossoms; then came rows of *Alternanthera paronychioides major*, *Mesembryanthemum cordifolium variegatum*, *Alternanthera magnifica*, the whole being edged with *Mesembryanthemum cordifolium variegatum*. The circle contained *Pelargonium Lass o' Gowrie*, which did not look at all well; it should have been planted with *Cineraria maritima compacta*. The next row was *Lobelia pumila grandiflora*, margined with a double row of *Echeveria glauca*, a good combination as regards colour; a round bed of *Fuchsia Sunray*, full of bloom, intermixed with a light blue *Lobelia*, had a pleasing appearance. I also noticed a bed of *Hemp (Cannabis gigantea)*, 12 feet high; this, I think, always looks best as a single specimen; *Pelargonium Amaranth*, with *Centaurea ragusina* round it, was very effective. Among sub-tropical plants, *Polymnia grandis* is certainly one of the very finest, and an oval bed with a centre consisting of *Vitis heterophylla variegata*, with a few plants of *Grevillea robusta* rising above, belted round with *Lonicera aurea reticulata*, was very effective; *Alternanthera magnifica*, edged with three rows of *Echeveria glauca*, was also lovely. There was, moreover, a large raised circular bed, the centre of which consisted of *Coleus Verschaffeltii splendens*, very bright in colour, surrounded with *Cineraria maritima compacta*, *Pyrethrum Golden Feather*, *Aloe attenuata*, and edged with *Echeveria pumila*. The raised border near the refreshment room I found very effectively planted with masses of *Stellaria graminea aurea*, broad bands of *Lobelia pumila grandiflora*, margined with three rows of *Echeveria glauca*, and filled in between with *Sedum glaucum*, the whole backed up with *Iresine Lindenii* and *Zonal Pelargoniums* in bloom.

In St. Stephen's Square, Westminster, were some large beds filled with *Pelargoniums* and edged with *Lobelia pumila grandiflora*, which certainly looked well, considering the many drawbacks to which their position subjects them. In front of the Houses of Parliament too, I noticed some fine beds of *Cannas*, edged with a pretty reddish-lilac coloured *Lobelia*, called *Omen*. In Victoria Park, entering, by what I think, is called the Hanover Gate, and turning to the right, the eye soon rests upon some elaborate carpet beds, consisting of a semi-circle with a *Tricolor Pelargonium* in the centre, banded with *Amarantus melancholicus ruber*, semi-circle of *Echeveria glauca*, edged with *Stellaria graminea aurea*, clipped, and in splendid order. A magnificent piece of scroll work next attracted attention, the groundwork of which was *Alternanthera amœna spectabilis*, with small masses, at equal distances apart, of *Coleus refulgens*, *Alternanthera amœna*, *Coleus Verschaffeltii*, surrounded with *Pyrethrum Golden Feather* and *Mesembryanthemum cordifolium variegatum*. There were several small circles of *Mesembryanthemum* with one plant of *Sempervivum tabulaforme* in the centre of each, the whole being edged with a double row of *Echeveria glauca*, a chaste and good arrangement. Along what is termed the Drive, I observed some fine circular beds of *Verbena Purple King*, also a good

scarlet *Tropæolum*, a seedling not yet named. The double-flowered variety of *Lobelia pumila grandiflora* is here, as elsewhere, a failure, spoiling some of the principal corner beds. I saw, moreover, some very fine round beds filled with white-edged *Pelargoniums* and *Viola Admiration* (a superb variety) mixed together, the whole being edged with *Pyrethrum Golden Feather*; these looked cheerful and pretty. Next came a sort of double kite-shaped bed, with two small circles for effect. The centre of this consisted of *Alternanthera amœna spectabilis*, next *Pyrethrum Golden Feather*, then a broad band of *Alternanthera magnifica*, edged with two rows of *Echeveria glauca*. The small circles consisted of *Mesembryanthemum cordifolium variegatum*, edged with *Echeveria glauca*, a mass of *Cerastium tomentosum*, at each end, being dovetailed into the *Alternanthera magnifica*. This is a very rich-looking faultless combination. One of the finest mixtures in the park, however, consists of a Maltese cross, formed of *Cerastium tomentosum*, supported by *Pyrethrum Golden Feather* and *Alternanthera amœna spectabilis*, very highly coloured; the three outside rows being *Mesembryanthemum cordifolium variegatum*, *Alternanthera magnifica*, and two rows of *Echeveria glauca*, the whole making a charming bed. A large round bed, with a star and triangles to match, also looked strikingly effective. The centre consisted of a dark-leaved *Coleus*, next a broad band of *Pyrethrum Golden Feather*, the next row and the spikes of the star being *Alternanthera amœna*, resting upon a fine piece of *Echeveria glauca*. The triangles were planted with *Alternanthera amœna*, with a border of *Pyrethrum Golden Feather*, the two outer rings *Alternanthera magnifica*, and two rows of *Echeveria glauca*. This appeared to be a faultless arrangement. The rockery, a beautiful spot, is covered with *Sedum glaucum*, and dotted all over with such plants as *Fuchsia Golden Treasure*, *F. Sunray*, *Stellaria graminea aurea*, *Sempervivum tabulaforme*, *Sedum acre elegans*, *Yucca aloefolia variegata*, *Portulaca grandiflora*, *Viola cornuta*, *Salvia argentea*, *Tussilago Farfara variegata*, *Eucalyptus globulus*, *Zea variegata*, *Agave americana variegata*, *Sedum F. spectabile*, *Centaurea Clementii*, *Echeveria metallica*, *Sempervivum arachnoideum*, *Kleinia repens*, *Dracœna ferrea*, *Pachyphytum bracteosum*, *Cotyledon spinosum*, *Amicia zygomeris*, *Pyrethrum Golden Feather*, *Sempervivum Bolli*, *Echeveria metallica glauca*, *Wigandia caracasana*, *Chamæpeuce diacantha*, and others.

R. H. B.

THE HELIOTROPE.

AMONG sweet-scented flowers the *Heliotrope* has long held a high position, both as a pot plant for conservatory decoration, and also as a fine plant for bedding purposes. Ten and fifteen years ago, beds of *Heliotropes* were to be found in every garden; they were grown not so much for display as for their soft beauty, their rich fragrance, and their continuous blooming character. A bed of *Heliotropes* is a rarity nowadays; even in catalogues they are now found under the head of miscellaneous bedding plants, instead of being prominently put forward, as we can well remember their being some years ago. Nevertheless the *Heliotrope* has been undergoing a certain amount of improvement year after year. Certain raisers on the Continent have been turning their attention in this direction, and with marked success; such improvement, however, has been confined to the production of seedlings with larger flowers and bolder trusses, without much variation in the colour, which ranges from a delicate greyish-lilac to a black-purple. The *Heliotrope* is a plant that, while admitting of much variation of the particular hue seen in the flowers, yet does not break from a certain monotony of colour found in the several varieties. The old-fashioned gardener, as we are apt to term him, still plants out his beds of *Heliotropes* in order to assist the summer display, and rejoices in the rich harvest of cut flowers which they afford him; the modern gardener rarely or never. The late springs of recent years have done something to bring the *Heliotrope* into disrepute, owing to its tender character. It is a plant so sensitive of frost as to be quite cut down and disfigured by a slight visitation from this unwelcome guest in early summer. An early frost in September will lay low the beauty of many a bed. Gardeners propagate the *Heliotrope* by means of cuttings put in in August, and again in spring. For all ordinary purposes spring-struck cuttings are the best especially where there is restricted accommodation for wintering the plants. If some good specimens were wanted for growing in pots for conservatory decoration, then the cuttings should be taken in July or August, choosing for the purpose the terminal shoot of some of the most luxuriant plants, and preparing the cuttings by cutting them through close under a joint. Insert a few round the sides of a 48 or a large 60 pot, and place them in a frame, and shade them from the sun. Bottom heat is not requisite for striking purposes at this season of the year. The cuttings soon make roots, generally in two or three weeks, and they begin also to make vigorous growth. They should then be potted off

singly into 60 pots, using a compost made up of light fibry loam, sandy peat, and well decomposed stable manure, such as that from a spent dung bed which has become somewhat dry under the influence of the summer's sun. As the plants fill the pots with roots they must be shifted into larger sized ones, in which they can remain during winter; and when they have received this last shift, the plants may be placed out of doors to ripen their growth and harden their wood previous to wintering them. They should be placed on a dry shelf near the glass in a greenhouse, where they will be out of the reach of harm from frost, and receive just enough water to keep them alive. In the spring, when young growth begins to appear, the plants should be turned out of the pots, the balls slightly shaken out and any worms removed, and re-potted into fresh soil of a character like that recommended above; and the branches should be shortened back with a knife, so as to lay the foundation for nice bushy plants. In the month of May give another shift, according to the size of the plants and requirements of the roots, and thus fine specimens will be formed that will bloom in the conservatory for many months, and if judiciously managed, yield flowers through a great part of the winter. Another mode of propagating is to lift a few plants from the beds in the open ground at the end of August, pot them, and winter them in a temperature of 45° to 50° if possible, and then put them into a brisk heat in early spring, where they will break into a profuse growth, and supply plenty of cuttings, that can be struck in the same way as *Verbenas* and *Petunias*, potted on, and made to grow rapidly and vigorously. As a rule flower gardeners prefer plants that have been struck from cuttings, early in spring, in this fashion. When bedded out the *Heliotrope* should be planted in a good soil, or, as one of our fine old gardeners puts it, "in soil that is well charged with rotted dung." First comes a free and luxuriant growth, and then, during the whole summer and autumn, as long as favourable weather continues, a profusion of gay and odoriferous blossoms. The following varieties can be well recommended: *Etoile de Marseilles*, pale, very large and fine; *Jaune Dumesne*, dark, very good, and striking; *Jean Amour*, delicate in colour; *Mons. Cassanave*, purple, very fine; *Mrs. Lewington*, shaded purple; a fine bedding variety; and *Souvenir de Leopold I.*, light lavender-lilac, very dwarf and free.

R. D.

TROPÆOLUM LOBBII.

UNDER judicious management, this *Tropæolum* may be had in flower all the year round, *i.e.*, where plants of it are grown for that purpose. It likes a rich, deep, friable loam; a stiff adhesive soil does not suit it, and when planted in such material it soon loses its under leaves, and becomes unhealthy and shabby in appearance. If the soil is naturally stiff, it is well to add to it some coarse sand and some well-rotted manure. When planted in a bed in the flower garden, it often proves a good plan to lay some neat branches flat upon the bed on which the plants run, and are kept just clear of the soil, as, although they like a good supply of moisture regularly, they are somewhat impatient of it when allowed to lie flatly upon a damp surface. This *Tropæolum* is very easily increased by means of cuttings, put in in the usual way. For winter flowering, I used to put eight or ten cuttings into a 6-inch pot; these were made of the youngest growths, which, in general, are too soft and too liable to damp off; nor is it well to take cuttings from the older parts of the stems, as it is but seldom they will grow. A few joints back from the points make the best cuttings. For winter flowering, let them be put in any time during the summer months. If struck in July or in August, with care, they may be had in flower in succession all through the winter months. They may be grown either singly in small pots or in large ones, according to the space and accommodation at command. They do not require much heat; a temperature of 45° or 55° suits them well, but they should have air upon all favourable occasions. Under judicious care and regular attention it is highly interesting to see how useful and accommodating such slender plants as these may become. I have often had them doing good service in both the greenhouse and conservatory in very different shapes and forms; sometimes when the cuttings had been rooted in nearly all sand, I have shifted them undisturbed from the cutting-pot into the centre of a much larger pot. The soil best suited for them when in pots consists of two parts friable loam and one turfy peat or leaf mould, adding sand to improve the texture, and to allow the fine roots free liberty to run where they liked. Whatever sized pots are used let them be thoroughly clean; and, having secured good drainage, fill them up in the usual way. I have had two or three plants in an 8-inch pot in excellent condition for months during winter and early spring. I have transferred six plants from a cutting-pot to a 10-inch one, planting at equal distances apart, and very near the side of the pot; then, after putting a few nice *Willows* or young *Hazel* sticks round the inside of the pot, gather their tops

together and tie them at 18 inches or 2 feet in height, so as to form a trellis, which may be either balloon-shaped or pyramidal, according to taste. As soon as the plants have acquired sufficient size let them be tied on this support regularly one after the other in a somewhat spiral manner, but taking care that the under portion of the trellis is well-furnished before the top. These shoots will often grow some time ere they begin to flower, and yet cuttings in general flower pretty soon after they have once started into free growth. Besides this way of training, I have had this *Tropæolum* in different shapes. The top of some young tree makes a good support for it; place it firmly into the middle of the pot, and train the young growths up the stem; as they progress, guide them to the outer points of the branches, which they will in time regularly cover, and thus form a miniature tree. When well grown, this *Tropæolum* looks well on the dinner table; but, for that purpose, it must be grown in small pots, and be otherwise well attended to, so as to be covered both with nice green foliage and red-orange flowers. Cut sprays of it in damp sand, placed round the edges of small vases, or epergnes, also look well in connection with fronds of Maiden-hair Fern, or anything similar in character. For flower garden work, spring-struck plants are best.

G. DAWSON.

AUTUMN CROCUSES.

THE following Crocuses are now flowering in my garden: I give the approximate dates at which they first opened:—Sept. 18. *Crocus speciosus*, the finest of all the autumnal species; stigma, bright orange red. *C. ibiricus autumnalis*, of Continental gardens, is in no way different from this. Sept. 22. *C. nudiflorus* (pyreneus), a very fine large purple species; stigma, yellow. I have also a small one, brought by Mr. Maw, from central Spain, which appears to be the same, though not half the size. Sept. 22. *C. Boryi*, small but very pretty; white, with yellow throat; anthers, white; stigma, yellow; the three outer petals are lilac exteriorly; but, in a variety I found in the island of Syra, which flowers later, they are veined only with lilac. Sept. 23. *C. serotinus*, lilac, leaves appearing after flowers. Sept. 25. *C. Salzmanni* (tingitannus), is put down by Mr. Baker as a variety of *serotinus*, but, in my plant, which came from north Africa, the leaves appear rather before the flowers, and are now several inches long, whereas those of *serotinus* are just showing. Sept. 26. *C. cancellatus*, lilac; if my specimen, which I had as *C. Spremeri* is true, it hardly differs in flower from *serotinus*, except that the stigma is rather more deeply divided. Sept. 29. *C. peloponnesiacus* (Orphanides), pure white; stigma, red; anthers, lemon colour; very pretty. Sept. 29. *C. byzantinus* (iridiflorus), deep lilac; stigma, lilac; anthers, lemon; easily distinguished by the three inner segments of the limb being much smaller than the outer ones, and not exceeding the anthers. Oct. 4. *C. longiflorus* (odorus), pale lilac, with yellow throat; stigma, red; anthers, yellow; leaves with flowers, if my plants are true, as I have no doubt they are, though Mr. Baker describes the leaves as coming after the flower; scent, faint. Oct. 5. *C. medius*, dark lilac or purple; stigma and anthers, yellow. *C. sativus* has leaves about an inch long, but does not yet show flower. Besides these I have—*C. Thomasi*, *C. hadriaticus*, and *C. Visianicus*, which will flower later. If any other autumnal species are grown in this country I should be glad to hear of them, especially any with yellow flowers.

H. J. ELWES.

THE BELLADONNA LILY.

IN addition to the representation and account of this Lily, which you have given at p. 113, allow me to say a few words:—This showy and truly splendid bulb has, I fear, not been treated with that attention which its merits as a late autumn flowering bulb deserve. It is true that we may here and there see a few imported plants of it in flower in pots, decorating the greenhouse or conservatory at this season; but they afford but a poor idea of the gorgeous flowers which this Lily produces when cultivated out-of-doors. About twelve years ago I had a number of imported bulbs, and after they had blossomed in pots they were planted out close to the front wall of a greenhouse, but they had no more protection there than they would have had at the bottom of any south wall. The holes in which they were planted were about 18 inches deep, and wide in proportion, 4 feet apart, and filled up with good sandy loam. In these holes four bulbs were planted, 4 inches deep; they were then covered with 10 inches of leaf mould in a conical form; they remained in this condition during the winter. As spring advanced I stirred and removed a portion of the leaf mould, in order that the heat from the rays of the sun might penetrate to invigorate the languid and blanched foliage, which at that season makes an effort to reach the genial air. This should be done until the bulbs are within 4 or 5 inches of the surface. If the weather is dry and warm let them have some good waterings, with a

view to encourage a rapid and strong growth of the foliage. Care should be taken that no plants of tall growth be planted in front of them to shade their foliage from the full effect of the meridian sun, nor a leaf removed until the ripening process has been fully accomplished, which, in favourable seasons, will be about the beginning of August. It was not until the third year after planting that these bulbs flowered with me. They are impatient of removal, and therefore the greatest care should be taken when offsets are removed not to interfere with the general mass of bulbs. When once established they produce offsets freely and flower abundantly, so much so that I have now, October 3, masses of them in full bloom, containing from twelve to eighteen flowering stems, with from eight to twelve blooms in each umbel. About the first week in September let the ground be stirred deeply around the bulbs without interfering with their roots, and thoroughly watered with weak manure-water once or twice. This will induce activity, and accelerate the protrusion of the flowering-stems. One objection may be made against these Lilies, and that is, that they are without foliage during their blooming period; but this may be greatly obviated by planting them in alternate patches with the *Jacobæa Lily*, which flowers splendidly in mid-summer, and whose fine green foliage will be in perfection during the flowering season of the *Belladonna Lily*.

M.

The Bulbs of Lilies.—Most of the Japan Lilies continue to produce flower-stems from the same bulb, but, by a close examination, we find that the flowers stalks spring from new buds, formed within the old bulb every season. They are in fact new bulbs formed within the parent one, but remain attached to the same base, drawing in part sustenance from the surrounding scales, which are only undeveloped leaves. The common wild Lilies, such as *L. superbum*, *canadense*, and *philadelphicum*, found growing in low meadows almost everywhere, are, according to a correspondent of *Moore's Rural*, perpetuated in quite a different manner. The bulbs are produced on large subterranean stems growing a few inches below the surface of the soil. This stem lengthens just sufficient to admit of a new bulb every year, the one formed the previous season blooming but once, then commencing to decay, although it is quite probable that they yield up a portion of their substance to the new one while growing. Very frequently, in digging up one of these white Lilies, we find quite a string of bulbs, of various ages, all attached to the subterranean stem; but the last formed, or youngest, is the only one which will bloom after the transplanting. Other species of bulbs and tubers increase in a different manner, each having peculiarities of its own, although all are obedient to a similar law. If we were to only study that portion of the vegetable kingdom which is seen above ground, one-half would be overlooked, for it is not unfrequently the case that the most interesting part is hidden in the earth.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Rose Cuttings.—When should these be put in?—ROSA. [Put them in now, having first removed their leaves with the exception of the two end ones, and cut them into 6-inch lengths. Insert them in a shady border, and cover them with hand-lights if convenient, but this is not absolutely necessary, as good plants may be reared without such assistance. Thus circumstanced, they should remain until April, when they will be fit for potting off.—F.]

Autumnal Flowers.—Among hardy flowers noted in Mr. Ware's Nurseries at Tottenham this week, the following are most attractive:—*Aster amellus*, *bessarabicus*, *grandiflorus*, *longifolius* var. *formosus* (very fine), *floribundus*, *ericoides*, and *Neveii*; *Lithospermum prostratum*, *Sternbergia lutea*, *Strumaria crispata*, *Phygelius capensis*, *Androsace lanuginosa*, *Liatris scariosa*, *Anemones japonica* and vars., *Campanula trachelium*, *Colchicums* of sorts, *Convolvulus mauritanicus*, *Stevias* of sorts, and *Cedronella mexicana*.

Phytolacca icosandra.—Most people are familiar with the beautiful tall-growing *Phytolacca decandra*—the "Virginian Poke"—with its long drooping racemes of dark olive or black fruit; but *P. icosandra* does not appear to be so well known. It grows from 2 to 3 feet high, and has a bushy habit, the leaves being similar to those of an *Hydrangea*. It bears longish spikes of rather inconspicuous creamy-white flowers, but it is its fruit which renders this plant remarkable and curious. Imagine a plant with perhaps a dozen stems or so, each terminating in clusters of fruit, similar in size and shape to Indian Corn, but composed, as it were, of ripe Blackberries, and you will have a tolerably good idea of the appearance of this plant at the present time. It is a plant which, when in perfection, is sure to elicit the remark, "Whatever is that?" from all who see it.—THOS. WILLIAMS, *Ormskirk*.

Wintering Salvia patens.—What is the best way of keeping tubers of this plant through the winter, and starting and increasing the same in spring.—H. LITTLEWOOD. [Let a dry day be chosen to take up the plants, and let the tops be cut off and the soil shaken from their roots. Lay them for a few days in a shed to dry, and, having procured a box or old tub sufficiently large to hold the roots when packed closely, get some dry sandy peat, finely broken; a layer of the roughest of this, about an inch thick, should be laid at the bottom of the box; the roots may then be packed as closely as possible in layers, and the spaces between each filled with peat. When the box is full, give it a good shaking, and press it well down with the hands, to stop up all the cavities; finally covering the whole about 2 inches thick with the rough part of the peat. The box may then be removed to a cellar or other convenient place, secure from frost, where it may remain without any further care until the following spring. Then unpack, pot the roots, and start them in heat, as you would *Dahlia* roots.]

THE GARDEN IN THE HOUSE.

FLOWERS IN HYACINTH GLASSES.

THOSE who may not care to incur the expense of glass stands, or who have no convenience for decoration on an extensive scale, may, nevertheless, produce a pleasing effect by lightly placing a few sprays of flowers in an ornamental Hyacinth glass. In this way such glasses are made to answer two purposes; one being to hold cut flowers in summer; the other bulbs in a growing state in winter. If, when being purchased, this twofold use is borne in mind, it will be better to get them of a more ornamental shape and better quality, than if for growing bulbs only. White and gold, and purple and gold, both produce pleasing contrasts, but there are several other colours of which choice may be made according to taste. When flowers are about to be arranged in such glasses as are represented in the accompanying illustration (for which we are indebted to Mr. Scott, of Merriott Nurseries, Crewkerne), dark and rich shades should be selected for flowers of a light colour, and bright shades for dark flowers. A spray of such a Rose as the Duke of Edinburgh, placed in a crimson-coloured glass embellished with gold looks well, as does also one of Gloire de Dijon, in a purple or dark blue glass; the arrangement in vases of this kind (if I may so term them) need not, however, be limited to one variety of flower. A white or tinted Rose in the style of Souvenir de la Malmaison, with a spray of Dielytra, one or two blue Forget-me-nots, and a few Grasses and Ferns would form a pretty mixture. Some of these glasses may be purchased in the form of three combined, as shown in the accompanying illustration; when such triplets are used, of course, more flowers must be employed in their decoration, such as Roses, Lilies, Sweet Peas, Fuchsias, Pelargoniums, Dielytra, and Ferns and Grasses of various kinds. The smaller vases are well adapted for mantelpiece decoration, or for small tables. The large kinds may be placed in the centre of a table of larger size, or a group may be formed on a side table. For a small breakfast table one of the larger-sized vases would form a pretty centre ornament, with a few small specimen-glasses grouped round it. A pair of such glasses in Etruscan ware, if filled with cut flowers of light coloured shades, would be well suited for the decoration of the buffet, or chimney piece in the dining-room; but like the flowers, the selection of the vases should be left to the decorator's own taste. A. HASSARD.



Flowers in Hyacinth glasses.

ARRANGEMENT OF FRUIT FOR DESSERT.

YOUR correspondent, "W. T. P.," objects to fruit being put on the dinner-table, because "the heat of the lamps, the steam of joints and of made dishes, &c.," have a tendency to spoil its taste. "W. T. P.," seems to have forgotten that neither soups, joints, nor made dishes, are now placed upon the table along with fruits and flowers. The fashion is now *à la Russ*, and the choicest fruits and flowers are required to deck a table laid out in this style. When the joints are carved on a side-table, and quickly removed from the room, they have little influence on either fruits or flowers; and very few made dishes are in fashion; cold *entrees* are now generally used, and even the handing round of a hot dish does not so quickly affect fruits or flowers as your correspondent imagines. If we are not to place fruits upon the table what are we to put in their stead? Fruits and flowers, neatly arranged and placed upon the dinner-table, have a charming effect, and there is no need whatever to introduce such strong-scented

flowers as Hyacinths, Tuberoses, and Narcissus; in fact, few would allow such flowers to form part of the decoration. "W. T. P." says "Oranges are objectionable on account of their bright colour; but in cases of emergency they might be allowed a place on the table." He forgets, seemingly, that many prefer the smell of Oranges to that of any other fruit; they form, in fact, one of our best dishes during winter, when there is little else that is bright or enlivening; what can look more beautiful than a pair of plates of Oranges when their colour is gently toned down with their own green leaves, matching a similar pair of plates loaded with Apples. Your correspondent appears also to object to Pine-Apples, but can he give us a better ornament for the centre of an epergne? Then he dislikes a Melon; but in dining rooms we use such fruits continually, and without complaint as to their odour, and to banish them from the table would, I think, be a mistake. I object to "W. T. P.'s" mode of serving fruits as one would an *entree*. The best plan is to place them where they can be seen to the best advantage. In placing fruits upon the table two objects should be kept in view, first, tasteful arrangement; secondly, to use the dessert dishes or service in which they are placed—dishes often possessed of antiquity and interest of other kinds. J. C. H.

Oxley Manor, near Wolverhampton.

Orchids for Vases.—Orchid flowers are most useful, either for hand bouquets, button-holes, or vases. It may be thought that they do not last long, but that is a mistake, as most of them remain fresh for a much longer time than many of our hardy garden flowers. Simplicity, in regard to plants selected for the decoration of vases is much to be commended, but to the use of hardy flowers alone, when tender ones can be had, I quite object. There are few, I apprehend, who would not prefer a vase decorated with sprays of what are termed Bridal Orchids, intermixed with other suitable relieving subjects, whether tender or hardy, to one composed wholly of Harebells, Forget-me-nots, white Water Lilies, Veronicas, and Grasses. These may be within the reach of all, but those who have, or can afford to obtain, the rich waxy and enchanting flowers of some of our

Dendrobiums, Odontoglossums, Oncidiums, Phalaenopsis, and others, by an elaborate system of arrangement can, in union with other suitable flowers, Fern fronds, and Grasses, produce a style of vase decoration unequalled by the most elegant composition of hardy flowers alone. If the vases are only required for the night's use, many flowers could be used that could not if they were required to stand for several nights; as, for instance, *Aërides*, *Saccolabiums*, and some *Dendrobiums*—that would be of little service otherwise than wired—could be effectively employed. These may sometimes be advantageously used without wires; but, although graceful in the extreme when growing on the plants, they are too apt to assume a clumsy appearance if used for furnishing table vases unless wired; and, if thus treated, they cannot get moisture to sustain their blooms in that desirable plump condition which they would retain if their stalks were inserted in water or damp sand.—A. H.

Panicum capillare (*Eragrostis elegans*).—I find this highly ornamental Grass to be most useful for mixing with all kinds of arrangements of cut flowers, its light, elegant miniature plumes lending a grace alike to the choicest exotics and the simplest hardy flowers. By means of this and a few sprays of Fern, even the uninitiated in floral decoration could scarcely fail to produce a charming combination of cut flowers.—JAMES GROOM.

A New Plant for Table Decoration.—*Amarantus Henderi* stands in the first rank of plants for this purpose. We have seen plants of it 2 feet high, with about thirty or forty shoots, forming perfect pyramids 18 inches across at the bottom. Some grow from 3 to 4 feet high. The prevailing colour of this variety is intense rosy-carmine, a fact that may be readily understood when it is stated that *Amarantus elegantissimus* was one of its parents. It is stated at p. 262 to have been a seedling of Messrs. Lamoureux's; that is a mistake; it was raised by Messrs. Hender, whose name it bears, at the Bedford Nursery, Plymouth.—A.

THE FRUIT GARDEN.

STRAWBERRY FORCING IN MARKET GARDENS.

STRAWBERRIES are forced largely in the market gardens around London. For this purpose the strongest and earliest runners are selected, and pegged down on 3-inch pots filled with soil, and plunged in the alleys. Here they soon root and are separated, and when the pots are well filled with roots, the plants are shifted into 6-inch ones, using a compost consisting of good loamy soil and manure. In cases in which pegging down the runners on the pots has been delayed too long, they are lifted and potted, and, if kept in a shady place for a short time, they soon make a potful of roots, but the plants thus raised are seldom so strong or good as runners prepared in the usual way. Pots containing Strawberries are placed on a level sheltered piece of ground, so that they may be well watered, and in October or November they are transferred to cold frames, in order that they may be protected from hard frosts. By the time when they require to be put into frames they ought to be pot-bound at the root, and their crowns and leaves should be well ripened, in order that they may start readily into growth, when required. All the care which they require in winter is protection from hard frost and heavy rains, and exposure during fine weather. When the stock of plants exceeds the amount of frame-room at command, a ridge of soil or ashes is raised out-of-doors, and into both sides of it the pots are inserted in a horizontal position; saturation with water, is, therefore, impossible, and when the crowns are dry the influence which frost exercises on them is less severe than would be the case if they were wet. Soon after the new year sets in forcing is commenced, and for the first batch, plants with strong well matured crowns are selected, and are started in gentle hotbeds in which they are kept near the glass. An atmospheric night temperature of 45° , with a rise of some 10° by day is sufficient at first, as the slower Strawberries are started and grown until they show flower the more likely are they to set well. When practicable, a little ventilation is given daily, particularly when the plants are in bloom; and, as soon as the fruit is set, the heat is gradually increased some 10° or 15° ; and, if ventilation can also be given at the same time, so much the better, as it assists in increasing the flavour of the fruit. Water is somewhat cautiously applied until the young fruits are formed, when it is given more liberally, and then, too, is the time to assist the crop with weak liquid manure. Sunk pits are those most in use for forcing Strawberries; and, in most of them a line of 4-inch piping, which runs along within the front wall, maintains an equable temperature. Span-roofed and lean-to houses, heated by means of hot-water pipes, are also largely employed for this kind of forcing. Mr. Wilmot's Strawberry-house, at Isleworth, is one of the best houses of the kind which I have seen. It is 10 feet high, about the same in width at the bottom, and the span comes down to the ground. The staging inside consists of nine shelves, arranged like the steps of a stair, as regards proximity to one another, and they are placed quite close to the glass. The plants most advanced in growth are placed on the top shelf on the sunny side of the house, and to these the plants lower down, and on the shady side, form good successions. Mr. Kneviatt, another celebrated Isleworth grower, has only four stages in his Strawberry-houses, but in that case they are broad enough to hold two rows of plants. When the fruit begins to colour water is partially withheld, as are also stimulants of all kinds. The produce is picked for market and put into punnets every second day. After yielding their fruits, the plants are transferred for a time to a frame, from which, as soon as they have become well inured to the weather, they are planted out into an open quarter of the garden. Here those planted out early yield some good late fruits. F.

THE VINTAGE IN FRANCE.

THE vintage is stated to have opened splendidly throughout France with every prospect of a bountiful yield, in spite of the ravages caused by the Phylloxera and late spring frosts. In the Bordelais, whence come the grand red wines of Latite, Latour, Margaux, and Haut-Brion, besides a score of others only a few degrees inferior in renown, the vintage for the most part has been accomplished during

favourable weather, after a succession of warm showers had swelled the Grapes; and as a consequence the yield from this region, which suffered severely from spring frosts and hailstones, will still be considerably beyond an average one. In Burgundy the vintage commenced as early as the middle of September at Chassagne, a locality with a warm precocious soil that yields wines of excellent quality, but in other districts it was deferred a week later. Of the finer growths of the Côte de Beaune, the quality of which promises well, the quantity will certainly equal that of an ordinary year; but as regards the commoner red wines, produced along the slopes and in the plains, the yield will scarcely amount to more than a quarter of an average one, although there will be no falling off of the wines known as *arrièrecôtes*. In Lower Burgundy, where the vintage opened the last week in September, the excessively dry weather which had prevailed for some time past, coupled with the damage done in the spring, led every one to expect a comparatively insignificant yield; fortunately, however, as in other districts, at the eleventh hour the vignerons were favoured with a succession of warm showers, which conduced to a far more satisfactory result than could have been anticipated. It is not generally known that a certain degree of warm moisture in the week immediately preceding the gathering of the Grapes contributes more towards a favourable yield than any number of days of uninterrupted sunshine. In the Mâconnais the vintage may be considered an average one, both as regards quality and quantity, while in the Beaujolais the new wine is considerably superior to that of the three last years, although the yield is only equivalent to an average vintage. There is a large deficiency from the Vineyards on the slopes, but in those on the summits of the hills the yield is most abundant. In Saône-et-Loire—along the Côtes Chalonnaises—where the vintage opened in the middle of September, the Grapes had completely matured, and the yield of the finer wines is very satisfactory; whereas, the Vineyards of the plains having suffered severely from spring frosts, the produce this year is insignificant. In no viticultural province of France has the want of rain been more severely felt this year than in the Champagne, where, in spite of the excessive heat, the Grapes are somewhat deficient in sugar, a serious drawback in the case of sparkling wines. The Champagne vintage was originally fixed for the close of the first fortnight in September, but it was not until the 17th that the gathering of the Grapes effectively commenced in the well-known Vineyards of Ay and Bouzy, and it was still several days later before the vintagers were at work at Haut Villers, Cumieres, Epernay, Cramant, and Le Mesnil. The average yield this year in the Champagne will exhibit a certain falling off, being estimated, in spite of the density of the Vine plantations, at no more than from 280 to 300 gallons per acre. With respect to the South of France, the vintage of the Hérault, which rose last year to the unprecedented quantity of nearly 300,000,000 gallons, being nearly quadruple that of the whole of Germany, including the annexed provinces of Alsace and Lorraine, promises this year to be still more abundant, and, as regards the Department of the Gard, many growers commenced vintaging too early in the vicinity of Nîmes, and, as a consequence, their wines are deficient both in colour and quality. In the neighbourhood of Redessan, where they began about the middle of September, the wines are said to be of good quality, and, so far as the Vines which escaped the attacks of the Phylloxera are concerned, the yield will be an abundant one. The storms which ravaged the neighbouring regions appear to have spared this department, the Vineyards of which had the benefit of a succession of genial showers during the summer. In the environs of Narbonne—the land of wine and honey—three months ago everything promised an abundant yield, but the excessively dry weather and great heat had greatly damaged the Grapes by the time the vintage commenced. Fortunately, about a fortnight ago, a more humid temperature set in, and the considerable quantities of fruit remaining to be picked largely profited by it, the wines being pronounced both richer in colour and more spirituous than usual. Scarcely had the vintage commenced in Roussillon than it was interrupted by torrents of rain, which inspired the owners with well-grounded fears as to the extent and quality of the yield. Unfortunately, the deluge came too late for the Vines on the hills, and too soon for those in the plains, the fruit of which is becoming mouldy; and it is feared that the produce of this celebrated district, which furnishes England with so many thousand pipes of so-called “vintage port,” will be far below what was anticipated. In the Orleanais, where the finest white wine vinegar in the world is produced, the yield in certain localities has been most excellent, while in others it has been unusually small. In the Lot-et-Garonne, the vintage has been especially prolific. After the small growers had filled their cellars, at least a fourth of the Grapes remained to be gathered. The fruit is large and well-matured, and the wine, which on account of its abundance, is offered at 45 francs the hogshead, is said to be of capital quality. In the Gers, where

the vintage commenced about a fortnight ago, the fruit is reported not to be particularly ripe, some little of the rain which we have lately had in too great abundance being sorely needed there.

Apple Gathering.—Mr. G. R. Green, of Hudson State of New York, has invented an ingenious method of gathering Apples, and so preventing the mischief which is done to the crop by shaking the tree, and avoiding the long and tiresome process of hand-picking. His invention consists of a piece of cloth or canvas as large as the top of the tree for which it is to be used, having in the middle a hole large enough to enclose the trunk, a slit is then made from the hole to the edge of the cloth, and the sides hemmed and a row of eyelet-holes made. When the trunk of the tree is enclosed in the hole the slit is laced up. At each corner of the cloth smaller holes are made and through three of these stakes are inserted, which are firmly driven into the ground. The fourth corner is attached to a barrel or basket, this barrel being lower than the stakes the Apples drop into it by their own weight.

Gathering Pears.—A Pear is a very delicate fruit, not only in the handling, but otherwise in securing the crop. If picked too early, like all or most fruits, it will shrink, remain hard or tough, and almost tasteless. If permitted to remain on the tree till ripe, the light and warmth—in other words, the sun—will, the fruit being dead ripe, evaporate its aroma, thus lessening the flavour as well as the juiciness. This is less the case with the thick-skinned specimens. A bruised Pear will soon perish. It therefore wants careful hand-picking, and careful handling all the way through till it is sold or used. If kept in the light, and where warm, whether picked or on the tree, evaporation will go on, and decay be accelerated. Keep, therefore, in a dark, cool place, neither too damp nor too dry, and be sure that the air is not charged with any foreign odour, as the Pear readily absorbs such odour. It is this impurity of the air that so often makes the difference in the same sort. A perfectly pure air, with darkness and coolness to slowly ripen and develop quality without evaporating it, is what is wanted, especially in the more delicate kinds. It will pay richly to give this attention. As to the time of picking, there are signs to direct us. The change in the colour is one, but is only to be trusted in experienced hands. The most common sign, and a safe one, is the readiness of the fruit to part from its twig, which it will do by lifting the Pear.—*Cultivator*.

The Parsley-leaved Bramble.—This is such an inconvenient customer to handle, the stems being so thickly studded with sharp spines, that the best way, I think, is to let it alone, and allow it to ramble as it pleases; in fact, more fruit is got from it in this than in any other way. I saw quite a mound of it lately in a garden, laden with fruit down to the ground. Planted in this way, it could be employed to cover waste pieces of ground where nothing else would do. Of course, when planted permanently in this manner, it would be advisable in the first instance to throw some good soil in to assist it, and every year some of the stools might be cut down to make them throw strong canes, and so ensure good-sized berries. It will thrive long in the same situation. At Fisher Holmes & Co's Nursery, Sheffield, the old stock plants have not been distributed since first planted, a dozen years or more ago, and they still bear in an extraordinary manner. Upon the points of some of the shoots I counted the other day about eighty fruits of different stages of ripeness. Even the young plants propagated this season for sale are bearing profusely on the earlier shoots. The fruit begins to ripen in September, and the plants continue to afford abundant pickings till November, or later if the weather is not very severe. Coming in as it does after all the other small fruits are over, it is a valuable addition to our hardy fruits. Our plants, which were planted about one year ago, have scrambled over a large extent of ground, and promise to fruit abundantly next year.—J. S. W.

Blackbirds in the Fruit Garden.—Perhaps you will allow me to describe my experience with the birds in my fruit garden this year. The principle, and in fact almost the only, depredators, were the blackbirds. Cherries, Strawberries, Currants, &c., one naturally expects to be attacked, but Pears, Plums, and Mulberries, I have hitherto considered safe from birds. The Cherries went first. I had a large tree full of fruit, which was cleared before it was ripe. Strawberries, Currants, and Gooseberries, followed as a matter of course. One morning, however, I was surprised to see the blackbirds attacking a tree of Jargonel Pears some time before they were ripe, and every Pear was so effectually destroyed, that I did not get one. Damsons, Plums, and all the varieties of Pears—of which there are a good many—were destroyed as they approached maturity; and a Fig tree, of course, came in for its share. This has been going on all the summer; and now they have taken to the Mulberries. I have, whilst writing this, driven eight blackbirds out of the tree. No doubt, I shall

be told by the friends of the birds, either that I do not know a blackbird when I see it, or that I was mistaken in supposing the birds to be the offenders. As most of the fruit trees, however, are in sight from my window, I have watched them daily with a glass, and have no doubt as to the fact. It is not very easy, from the locality, to kill many of the birds with a gun. Next season, however, I intend to offer a reward for blackbird's nests, and hope by this means to keep them down. I have little doubt that more than half of the fruit in the garden—which is a large one—has been destroyed by the blackbirds alone. The residents in this part of the country seem to take it as a matter of course; but I certainly have never seen the same sort of thing before.—E. B., *North Wales*. [That blackbirds eat fruit with avidity is, we believe, admitted on all hands. The usual course taken by their friends is not to deny their identity, but rather to palliate their offences, as is done by Yarrell in the following sentences: "The food of the blackbird varies considerably with the season. In the spring and early part of the summer it consists of the larvæ of insects, with worms and snails, the shells of which are dexterously broken against a stone, to get at the soft body of the animal within. As the season advances, they exhibit their great partiality for fruit of various sorts; and their constant visits to the garden bring upon them the vengeance of the gardener, whose gun is ever ready at hand to repel or destroy the numerous invaders. When, however, the enormous number of insects and their larvæ, with the abundance of slugs and snails, all injurious to vegetation, which are eaten by blackbirds throughout a great portion of the year, are duly considered, it may fairly be doubted whether the value of the fruit is not counterbalanced by services performed."—ED.]—*Field*.

Walnuts.—Although it is a fact well-known to the trade, many of the public may be surprised to hear that of the large quantities of Walnuts now to be seen for sale in all our leading thoroughfares, the bulk consists of Nuts of French and Dutch growth. Indeed, the present is undoubtedly one of the most prolific seasons for Walnuts that has ever been remembered on the Continent. The chief consignments come from France, Belgium, and Holland, and are received and distributed by means of three separate agencies. The largest parcels are disposed of in Pudding Lane and its vicinity, while some are landed and sold at the Dutch Market near St. Katherine's Wharf, and others find their way to the more aristocratic regions of Covent Garden. At each place there is generally a great concourse of buyers, principally of the costermonger class, who gain an honest livelihood by hawking the goods about the streets. When it is stated that thousands of packages of Walnuts have been imported and passed into consumption since the opening of the season, some idea may be formed of the activity that has characterised so slender an arm of commerce as that depending on Walnuts. Those to whom numbers, quantities, and prices possess a sort of charm, may be told that a sack or bag of Walnuts weighs about 50 kilos, which are equal to about 110 lbs. English avoirdupois; that one bag contains about 4,000 nuts, and can be bought of the importer at an average of 14s. per cwt., so that at the rate of sixteen a penny the enterprising costermonger gets a profit of 7s. per cwt., which represents his greatest earnings, as it takes him a whole day to "sell out" a single bag or barrow-load of Walnuts.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The "Peach Nut": What is it?—Can anyone tell me what fruit is that described in the following extract from an Italian letter?—"Within the last few days our list of fruits has been increased by the Peach Nut, a fruit peach-shaped and flavoured, but with the skin of a Plum. It has the Pomegranate shades of red and yellow, and when thoroughly ripe is delicious."—J. H. G.

The Joc-o-sot Cherry.—This was raised by Dr. Kirtland of Cleveland, and sent to this country with many other seedlings, one of which, Governor Wood, has obtained a permanent place. The Joc-o-sot is a large brownish-black Cherry, rich and sweet, ripening about the middle of July. It is not, however, better than many other black Cherries.—F. RIVERS.

Best Vines for an Orchard-house.—I should be obliged for information as to the best Vines for planting in a roomy and excellent orchard-house, but without any heating apparatus.—LADY T. [The best Vines for a cold orchard-house are Black Hamburgh, Buckland Sweet Water, Madresfield Court, and Foster's White Seedling; if a Frontignan Grape is liked, the early Smyrna will do well.—F. RIVERS.]

Covering for Vine Borders in Winter.—Kindly state in your next number what is the best covering for Vine borders.—BURY. [There is nothing better than wooden shutters. We have used coverings made of asphaltic roofing nailed on a frame, and found it answer well. It is cheap, also, and we would prefer it either to zinc or canvas, which, we think, would prove rather expensive. Wooden shutters are, perhaps, best and cheapest in the long run.—T.]

Preparing Cuttings in Autumn.—Cuttings of the Currant, Gooseberry, and Grape are better if cut immediately on the fall of the leaf, plunged into moist sand two-thirds of their length, and placed in a cellar. If Nature is as propitious to others as she has been to us, the cuttings will be found in the spring with the granulations completed at the lower end, and the roots just ready to push; and, on being planted out, they grow off immediately, forming, during the season, well established plants.—H. W. BEECHER.

GARDENING IN SPAIN.

(IRRIGATION OF HUERTAS, JARDINES, AND ALAMEDAS.)

THE drought of the past summer has taught us, even in rainy England, the value of water in husbandry and horticulture; but this dryness of the season, which is the exception in our own country, is the rule in some others, and in no country of Europe is it more so than in the south of Spain. There, where water does abound, the land is as the garden of Eden, but, without this fertilising element, it would be a barren desert. We speak of river-water, for well-water is, in most districts, so charged with "villainous saltpetre," that it proves as deadly to the thirsty plant as sea-water to the thirsty sailor; and during six months of the year no rain, beyond an occasional thunder-shower, must be expected. With water you can grow anything, without it nothing—if we except some plants of the Cactus tribe, such as the Prickly Pear, which seems to have the property of flourishing just where nothing else, not even a blade of Grass or Esparto, will grow. There are several districts in the south of Spain, whose produce is of great importance in the world's market, and which owe their vast productive power solely to an intricate system of irrigation. One of these, to which the Moors gave the name of *Al-Bastan*—the Garden—on account of its prodigious fertility, lies in a valley watered by the river Segura. It is about 5 leagues in length by 3 in breadth, and is known at the present day as the Huerta (*hortus*) of Murcia. The vegetation was originally confined to the banks of the river, but the ingenious and industrious Moors, by a contrivance called the *Contraparada*, made the whole district one which recalls the most florid passages of the "Song of Solomon." From some distance up the river they cut canals, leading through the length of the valley around Murcia, and re-joining the Segura some distance below the city. Out of these canals run a number of small water-courses, permeating every allotment in the Huerta; while, by means of a sluice, the occupiers of these can, at the hour, and for the time prescribed by the authorities, water their land, which usually bears four harvests in the year. This system of irrigation the Spaniards have adopted for their private and public gardens, but as regards their *huertas* and *vegas*, they have done little more than keep in repair the water-courses bequeathed to them by the Moors. As water is the life of vegetation, and, consequently, of man and beast also, to say nothing of it as a source of national wealth, it is literally meted out to the holders of allotments, so that no man may get more than his share. The power of this fertilising agent being such, that Moorish poets have described the waters of the Darro and Xenil, which irrigate the Vega of Granada, as "streams of liquid gold flowing between emerald banks." In order, therefore, to get the full benefit of this, the plants in a Spanish garden are, for the most part, grown in gutters, or holes, instead of on raised beds of earth as with us. The Murcians frequently tell the stranger that whatever will grow in South America will flourish in their Huerta, and during a long residence in their capital we had opportunities of seeing much that bears out this assertion. All the glory of Oriental and Occidental vegetation seems to be gathered there as if in a vast tropical garden. There grow the Palm, the Olive, the Fig, and the Pomegranate; the Almond tree flourishes, and in its branches the grasshopper (of scripture) is a burden; "the husks of which the swine did eat" hang like great Kidney-

Bean pods upon the Carrob tree, and the Shittim tree gives a pleasant shade by the way side. The Cypress and the Turpentine tree grow in the cemeteries, and tall Canes whisper by the waterbrooks. The Vine and the Calabash plant ramble over verandah and trellis, the Magnolia opens its large flowers, and the Passion-flower, taking the place of Ivy with us, hangs in long tresses down the garden wall. The Orange, the Lemon, and the Mulberry tree, stand about as thick as fruit trees in an English market-garden, while beneath them, in the summer, grow fields of Tomatoes, and, in the autumn, of red Pepper. Wherever there is a barren, unwatered spot, the clumsy Cactus (Prickly Pear) shows its yellow blossoms or its ruddy fruit.

One of the common uses of this Cactus is, jointly with the Alee-like Pitera, to form an enclosure, or a hedge by the way side, as in the accompanying illustration, both of these being extremely troublesome plants to meddle with. The Cactus (shown on the left in the engraving) is defended with little clusters of sharp bearded spines, which after they have once entered the flesh cannot easily be got out, but rankle and often cause sores. Indeed the law has thought proper to take cognisance of this, and there is a penalty attached to the sending to market of Prickly Pears (Higos chumbos) as the fruit of this Cactus is called, without the

previous extraction of the little spines which are found upon them, as well as upon the leaves, showing at a short distance like spots placed at regular intervals. It is usual also for the vendors of these Prickly Pears to hold them in a cloth whilst preparing them for the eater, who stands at the stall, and swallows the sweet pulp, stones and all, as quickly as the Londoner will oysters; the use of the stones being to counteract the astringent nature of the pulp. The Pitera is shown on the right of the engraving. This plant has a stiff fleshy leaf of a glaucous colour, and is tipped with a hard spine, while shorter ones are found down the sides for a little distance. Though it seldom is found of any height (except as regards its blossom stems) it is a formidable obstacle to



A garden in Spain (the Alameda at Cordova).

encounter. Little plots of land, remote from the city, are often fenced in with this stubborn plant, whose cold-green leaf contrasts strongly with every other. When it blossoms the flower-stems rise to the height of from 20 to 30 feet, and look like gigantic candelabra. Some of the holdings in the Huerta are private gardens of the wealthier classes, and are often enclosed with fences of plaited cane, looking very Chinese. Most of the plots, however, are open, as with allotment gardens in England.

The system of irrigation applied to the Huerta, is carried out in the public gardens of Murcia, the Glorieta, and Carmen. Here are various plants indigenous and exotic, all planted in gutters or holes, which can be filled with water at the appointed time. A very fine South American Plantain grows in the Glorieta. The garden Del Carmen, is provided with seats, fountains, and a statue, to which, as it changes with the revolutions, it would be unsafe to give a name. Murcia is not, however, quite independent of rain, for if the dry season be unusually long, the Segura sinks too low (from exhaustion) to supply all the watercourses, and recourse is had to our Lady of the Holy Fountain at Algezares, about a league off. The image is brought forth (for a consideration), and long lines of rustics accompany it, bearing the tall green canes before-metioned. With these from time to time they strike the image, and cry—"Water, water, O Mother of the Holy Foun-

tain!" The Huerta of Orihuela, however, from its being lower down the stream, does not suffer so much from drought, and a local proverb says—*Llueva ó no llueva, trigo en Orihuela*.

Whether it rain, or do not rain,
In Orihuela there's always grain.

To water the Huerta of Lorca (the key of the old kingdom of Murcia) a reservoir is made by damming up the stream; an enormous dyke of yellowish stone being constructed across the whole width of the valley. From the reservoir water is doled out to the lands below. As in a weary land, shade is chiefly sought in the public promenades, scarcely any town is without its Alameda. These are often of great beauty, as will be seen from the accompanying view of the Alameda at Cordova with its fountain throwing up water in a grove of Palms, Cypress, and Acacia trees. The Palm tree was first planted here by the hand of Abdu-r-rhman, as a memorial of his much-loved Damascus; and the identical tree is still pointed out to strangers, growing in the Court of Oranges in front of the large mosque. The roof of this building was formerly of

able to take a promenade in the Alameda, assemble at their *rejas*, iron-grated windows, looking like birds in a cage; or may be seen standing in their balconies, and talking to their friends and acquaintances as they pass by. The Spanish *senorita* is usually well skilled in the language of flowers, and expert in that of the fan which is able to convey much telegraphic information—open six folds and turned upwards, it would signify "6 a.m.," if it were reversed, 6 p.m.," and so on. An appointment would be asked for by holding the closed fan horizontally between the thumb and finger. The lover generally takes his station against a house on the opposite side of the narrow street and looks up towards the balcony of his *senorita*, and we have on one occasion, in Murcia, seen a "Wallflower" of this description damped in his ardour by mischievous systems of irrigation from a balcony above.

J. M. WOODWARD.

Singular Fossil Tree.—In the bottom of the main shaft of the Virginia City Coal Company, El Dorado, California, has been encountered the trunk of a large tree, 4 feet in diameter—a lone



American Aloe naturalised in Spain.

Alerce wood, and the tree which supplied it (introduced by the Moors), was once plentiful in the neighbourhood, but it is now extinct. When, after a lapse of a thousand years, the roof was taken down, the timber was still sound, and being sawn into planks was much sought after for guitars. At the present day the tree is found in the Berber Mountains, and by the people of that country is called Laris (the root of the word Larch). The lover of that which is beautiful in Nature will doubtless regret to hear that the Palm is decreasing in Spain, partly because the fruit is inferior to the Barbary Date, and partly because the tree is often injured for the sake of providing the bleached Palm-leaves, which are placed in front of Spanish houses in Holy week, as a protection throughout the year against lightning. To procure these, this beautiful tree is tied up at the top like a Cabbage, its health being injured for the sake of a fair complexion. Young ladies also, in Spain, generally suffer a bleaching process, from their being so much kept indoors and in darkened rooms; they are not allowed to walk out except in company with a married relative, or some other chaperon. Hence, in an evening, those who are not

relic of an ancient and extinct forest. Where cut through by the shaft of this old tree is found to be perfectly carbonised, turned into coal. Outside, the old log is completely crusted over with iron pyrites, many of which are so bright that the crystals shine like diamonds. These crystals also extend into the body of the log, filling what were once cracks or wind-shakes, and even forming clusters about what once was the heart of the tree. This relic of an old-time forest lies far below the two veins of coal the company are about to open.—*Iron*.

A new way with Students.—Speaking of the method of teaching at Penikese School, Professor Putman said:—"Text-books are not allowed. Our way was to give each student a specimen of fish and ask him or her to study that fish and tell the instructor what had been observed. Thus we developed their powers of observation upon the external character of the fish. After they had studied the fishes for about two days, they were called upon to state what they had seen. Then the anatomy of the specimen was gone into, and the students were led on step by step until they had secured a very firmly-founded idea of the structure of a vertebrate animal. Then we asked questions as to the character of vertebrates, and finally they began to be original investigators. We really demonstrated in a

practical way the subject, which is exciting so much attention now of co-education of the sexes. We found that the ladies of the school were as capable in every way of making careful dissections and rendering careful accounts of the work they had done as the gentlemen; and, in fact, four or five of the ladies became original investigators before any of the gentlemen. This showed conclusively that the ladies had the power of becoming original investigators in science if they only would give the application."

CHILDREN AND FLOWERS.

ONE day, a child came into my garden; he surrounded a space of about a foot square with sticks; then he gathered some Roses, and planted them, by sticking the stalks in the ground. He did the same by a very fine Pink. When I returned, I felt a sensation of impatience, and if the child had been there, it is probable that I should have scolded him severely; but he was gone, happily for him, because I should have frightened him, and happily for myself, because I should have certainly said many foolish things. Not seeing him, I reflected a little, and remembered two things. The first is, that I do exactly what this child has done. Before I had a garden of my own, I walked freely in the woods, on the banks of rivers, on the shores of the sea. One day I bought myself a large plot of ground, which I surrounded with stones in the form of a wall; and I planted in it trees and flowers brought from all sorts of soils. The child had liberty to walk in all my garden, to see and inhale all the flowers; he preferred enclosing a little square patch, and to stick in it two or three of these same flowers, exactly as I had done, only it cost him nothing but the time in which he did it, and I have spent much money. Then, when his garden was made, he left it, went to amuse himself with something else, and forgot it; whilst I, with this plot of ground, have purchased a thousand cares. Formerly, if the wind in its fury blew down a tree, that was a spectacle for me; to-day, it breaks one of my trees, and that is a fear beforehand, a regret and a loss afterwards. I like old ruined walls falling into dust, and creating retreats for the lizards; now-a-days, I feel a great inclination to have my wall repaired, some of the stones being detached. The second thing I recollected was, that I formerly did, when I was a child, exactly the same thing in the garden of another person, that this child did in mine. My brother and I were then quite little fellows, and we were sent in the morning to a sort of school, not, I suppose, that we might learn anything—not that we might be at school—but that we might not be at home; where, probably, we made more noise than was agreeable. The master of the school, or of the academy, I do not know which title he claimed for himself, was like others; he was an honest *restaurateur*, who made up for the butter he did not put into the soup of his pupils by instruction which he was supposed to impart to them. The plan of these houses, in which it is always announced that the heart and the mind of youth is formed, is always invariably established on this problem: to find a means of selling soup in the most advantageous way possible. The problem is resolved in the manner of the possessors of cafés, who propose one nearly analogous: viz. to find the means of selling for fifteen or twenty sous that which people would have better at home, and without inconvenience, for four or five sous. The cafés have the journals; the schoolmasters, those other publichouse keepers, have Latin. This worthy, who was named M. Roncin, was the largest man I ever saw; this was his only means of obtaining consideration. Madame Roncin presided in the kitchen, with the help of a female servant. The other cookery, the Latin, was carried on by two or three poor fellows, ill fed and ill paid. They must have cost the establishment much less than the butter would have cost that ought to have been added to the soup, if a cook of another kind had been in question. To tell the truth, it was the servant that was the real mistress of the house. M. Roncin was a sort of cipher; and Madame Roncin, who directed everything, never decided anything without consulting with Marianne before the stove. We being among the number of the smallest, were shut up during six hours of the day in what was called the French class. We passed the time in the best way we could; we made birds and boats with paper—we played odd or even with marbles. When the master caught us, he confiscated our marbles, threw away our birds and boats, and placed us on our knees in a corner of the room; then he made us learn and repeat by heart something which began in this manner: "Grammar is the art of speaking and writing correctly," &c., of which we comprehended nothing, and he very little. He was a poor, old, thin man, who went through it all with the most serious countenance imaginable. There were nearly two hours of the day consecrated to what was called recreation. During these two hours they let us loose in a large court, in which were three or four old trees that had stood out against both time and the school-boys. What joy, and what cries, and what a tumult! How we used to run and jump—how happy we used to be! It happened

one day that one of us, I do not know which, took it into his head to make a garden; he dug up with his knife, in a corner, a square about the size of a table, he traced walks of 4 inches in width, put sand on his walks, and planted some small branches torn from the large trees in the flower beds, and also a stalk cut from a Gillyflower, which had blossomed of itself in the wall. Gardens became the fashion. Those who, like us, were day boys, that is to say, only came in the morning and went away at night, brought, every day, branches of cut flowers and seeds of all sorts. The flowers were faded by the end of an hour, and the seeds were forgotten and replaced by others a fortnight before they could have germinated. My brother and I went in the morning, with a little basket, in which were put the provisions for the day—slices of bread-and-butter and some fruit, destined for a meal while the other boys were at dinner. We were humiliated by the neighbourhood of a garden that quite eclipsed ours. The possessor of this garden had, as we had done in ours, sown some Peas. His were much handsomer than ours. Perhaps he had taken them up less frequently to see if they had germinated. One day we were inspired with the means of putting an end to our envy, and, at the same time, of awakening it in our comrades. My father had a neighbour; each possessed the half of a large garden, which was divided only by a walk. This neighbour had some magnificent Hyacinths, and was very proud of them. We took it into our heads to transfer these Hyacinths to our school-garden. In the evening I stole quietly from the house, and went straight to the bed of Hyacinths; I trembled a little, but I seized one by the stalk. I pulled it in order to break it, but the root followed the stalk. I did not want the root—there was nothing pretty in that, and I saw no use in it. Nevertheless, I deferred separating it till I could safely throw it away; but I had not the time. I took a second Hyacinth, then a third; I concealed them in the cellar. I went into the house again, and my brother, in his turn, attacked the Hyacinth bed. Nisus and Euryalus did not commit greater havoc among the Rutulians. When morning came, never had we been up so early, or so ready to go to school. We laid eight or ten roots at the bottom of our basket, and three or four, the flower-stalks of which we had gathered without the root; and then we placed our bread-and-butter at the top. These are but bad recollections, you will say, my friend; and yet, I can assure you, that neither my brother nor I acquired from this boy's trick any propensity for stealing. The same thing happened to St. Augustine, who, when a child, was a thief, as we were, and relates the circumstance in his Confessions with a sort of witty, half-roguish contrition. "There was" says he "a Pear tree near our Vine loaded with fruit; one night, after having, as usual, rambled about the streets, we went, a troop of young rogues and I, to gather these Pears; which we did, and if we tasted one it was simply for the pleasure of doing what we were forbidden to do." I had not, as St. Augustine had, the consolation of being punished for my crime by the crime itself. If his Pears were not sweet, I must confess that the Hyacinths were beautiful. My punishment arrived late; it did not arrive until yesterday, but it did arrive. The Hyacinths were beautiful, and we enjoyed beforehand the admiration and envy they would create at playtime. We went straight to school, under the care of the gardener, without stopping, as usual, to gaze into the shop windows. When arrived, as we knew the Hyacinths would stand a chance of being stolen, we would not place our basket in the corner where the baskets were usually deposited; we kept ours, and concealed it under the form between our legs. It appeared to us that this interminable class would never be over, or the moment arrive at which we could go and plant our Hyacinths. All at once the door was opened, and Madame Roncin entered. She called us both in one of her blindest tones: "I am told you have got some beautiful flowers for your garden. Let me see them. Then we were like La Fontaine's raven; we took our basket and gave it up to the admiration of Madame Roncin. In the first place, Madame took out the slices of bread-and-butter and placed them on the table of old Father Poquet; then she took out the Hyacinths, one by one, and ranged them near the bread-and-butter. At this moment I raised my eyes and saw, close against the windows of the school-room door, two faces! two formidable faces! that of the owner of the Hyacinths, and that of the gardener, whom my father had sent to fetch us home to expiate our fault. I will not inflict upon you the detail of the reproaches we received, or of the punishment reserved for us till our return to school the next day. We were ordered to carry our basket to the kitchen, where Madam Roncin and her servant were at breakfast. Both saluted us with the title of "little thieves." At first we cried a little; but my brother whispered, "I say, Stephen, did you see anything?" "Yes; didn't you?" And that which we had seen was, that on one of the stoves were two of the finest Hyacinths in pots, which Madame Roncin had contrived, by some means, to appropriate to herself. I soon forgot both the Hyacinths and our offence, but I could not help, yesterday, remembering both the one and the other. My beautiful Roses, that I had

looked forward to during ten months! my own diamonds! my dear flowers! I went every morning, from the day of their blooming, to salute them, the first thing on entering my garden; I examined them to see if anything had injured them, to see if any insect were gnawing the buds. I gazed at them, I breathed their perfume, and I felt myself rich and almost insolent. And this confounded child inhumanly tore them from their boughs, and stuck them in his garden, where they died in a few hours! And my Pink! a beautiful Flemish Pink, white with violet bands; a Pink which I had, only the evening before, obstinately refused to a lady who requested it of me! Then, and not till then, was I aware of all the grief I had caused our poor neighbour, the man of the Hyacinths. It appeared to me that I underwent one of those vengeance that Dido announces to the perjured Æneas:—

Exoriare aliquis nostris ex ossibus ultor.

That child was not then born who now forces from me such just reflections. In fact, it is our children who will repay us the pains and anxieties that we have cost our parents. At the same time, let us not require from them the tenderness we feel for them; it is not to us that they owe it or will pay it, it is to the children they will themselves have, and of whom they will complain unjustly, then, as we complain of them, and as our fathers complained of us. "We only remember the respect and gratitude we owe to our parents to require it of our children."—"Tour Round my Garden."

THE KITCHEN GARDEN.

NEW KINDS OF POTATOES AND THEIR CULTURE.

IN spite of sharp late spring frosts and a very dry summer, the Potato crop of the past season has been one of the best which we have had for several years—best, not in the sense of greater abundance, as the crop of last year was heavy, but as regards healthiness and an almost entire immunity from disease. Potatoes, in consequence, are now remarkably cheap, and cheap they will probably remain until after Christmas. One result of immunity from disease has been, that many kinds, perchance hitherto not well known, have exhibited their true characters, and we are thus in a position to give a fairer opinion of their merits than we have been able to do in previous years. My own Potatoes are in all respects truly excellent; and, where a selection of kinds has grown under special cultivation, in order to obtain good tubers for exhibition, the extra labour involved has been amply repaid; indeed, the longer I grow Potatoes the more I am convinced that no vegetable more thoroughly recoups extra cost and labour, producing, as it does, not only a heavier crop, but also one, in every way, of finer quality. Ordinary cultivation may be described as digging, drilling, or dibbling the tubers into the ground in rows, 2 feet apart, afterwards cleaning and earthing up in the usual way. Extraordinary cultivation consists in trenching and manuring in the autumn of the previous year; then, after the ground has laid for a few weeks, marking it out for ridges, 3 or 4 feet apart, as the case may be, and digging it a second time; each width so marked off is thrown into a ridge, and in this state is allowed to remain during severe weather. Whilst the soil is being thus purified by frost, a mixture of short rotten manure, vegetable refuse, or leaf mould, mixed with roadside parings and other matters of that kind, is frequently turned, well mixed together, and worked into a thoroughly pulverised state. This is then spread as thickly as can be spared along each furrow and well forked in, the same operation being repeated if the ground is at all stiff and heavy; then just before planting, a mixture of one-half slaked lime, and the other half equal parts of soot, guano, and salt, should be prepared, and if a quantity of fine wood ashes can be added, so much the better. This mixture is then strewn thickly along the furrows, and pointed in to the depth of 4 or 5 inches. The soil is then ready for planting. This is effected by having a drill drawn with a hoe down the centre of the furrow, and in this the sets are laid about 15 inches apart, and several inches of the finest soil are forked over them. Thus the ground remains until the haulm is well through it, when the ridges are again forked over, and thoroughly pulverised, a portion of the loose soil being placed around the young growth. In a fortnight a partial earthing up with a fork follows, and a final one is given a week or so later,

when beyond keeping the ground clear of weeds, little else is done until the period for lifting the crop comes round. Not the least important part of my mode of cultivation consists in the proper preparation of the sets. As a rule, the best seed-tubers are those of good medium size, clean, firm, and well-seasoned, and which have been stored through the winter in such a manner that, at planting time, the shoots made are stout and vigorous, and in no way drawn or blanched. Then, it is advisable, if extra fine samples be desired, to gouge out with a sharp knife all but the single crown eye, and it will be found that when the crop is lifted, there will be very few small tubers, and a very fine sample of large ones. Our most successful exhibitors all adopt this practice with the most satisfactory results, and I recommend this mode of culture and treatment of the seed-sets to all who may be disposed to enter fully into the matter of profitable Potato cultivation.

As to varieties, the following is a selection of sorts not commonly known, either because they grow only in certain districts, or because they are yet comparatively new. I will begin with an undoubtedly new kind, that has been this year grown only at Chiswick, having been sent there direct from Messrs. Bliss & Sons, of New York. It is called the New Early White, a designation under which it has been awarded a first-class certificate. The tubers are white, flattish-round in shape, of neat appearance, and produced in abundance; the haulm is dwarf and compact, and ripens off early. The special merits of this variety consist in its being a first early, a good cropper, and of excellent table quality. Veitch's Early Perfection is a first early, producing round tubers, white, smooth, and handsome; it is a fair cropper and of excellent quality; haulm, short, ripening off early. Fenn's Early Market is also a first early; tubers, round, large, and handsome; the skin is white, but the flesh is yellow and first-rate, both as regards quality and flavour; haulm, short and distinct. It is a capital cropper, and has received a first-class certificate at Chiswick. Both of these kinds are eminently garden Potatoes, and should be grown in rich soil. Fenn's Early White Kidney has also obtained a first-class certificate. It is a first early kidney, the tubers of which are white, handsome, and of good size; the flesh is white and of first-rate quality, and, in short, it is an improvement on the Ashleaf, which is one of its parents; the haulm is distinct and of moderate growth, and it is a good cropper. The Purple Ashleaf is a very old, but by no means a common, kind; it is not quite so early as the White Ashleaf, but it is a heavier cropper; its tubers are large and handsome, and the flesh is white and good. This is undoubtedly the best purple kidney in cultivation, either for table use or for exhibition. Wonderful Red Kidney is a variety that might well be termed the Red Ashleaf, although it differs materially from that kind, which is late in ripening, whilst Wonderful Red is a first early, producing handsome pale red tubers of good quality. Bountiful, a second early and a keeper, is another of Mr. Fenn's kinds, and has recently received a first-class certificate at Chiswick. The tubers have a moderately netted skin, deep red in colour, and exceedingly handsome; they are never unduly large, and are produced in great abundance; it is emphatically a bountiful cropper; it is one of the handsomest kinds for purposes of exhibition. During the past season an early second early white kidney has been grown at Chiswick, under the respective names of the Shiner, Sutton's Defiance, Cooling's Early Prolific, and others. It has an Ashleaf type of foliage; the tubers are large, flat, and handsome; and it is a good cropper; the table quality is not first-rate, but it may improve where grown in good soils. The glowing accounts given last winter as to the wonderful produce in America of the Extra Early Vermont, and its having received a first-class certificate at Chiswick, have caused it to be largely sold; notwithstanding the fact that the selling price was 2s. 6d. per lb. I am, however, compelled to say that it differs so slightly from the Early Rose that it is exceedingly difficult to discern the difference. It is, however, something in its favour, that although it produces a great abundance of tubers, few of them are so large as not to be of good table use. I shall grow it again another year before pronouncing finally on its merits. I have yet another of the Early Rose family, viz., Early Gem. This was sent us from America, and is an exact duplicate of the Extra Early Vermont. The best of all the Rose family, is the

Late American Rose, a very fine distinct kind with robust haulm, and, at least, a fortnight later in ripening than the others; its tubers are large, pale red, and slightly netted; the flesh is white and mealy. It is a very large cropper, handsome for exhibition, and a first-rate kind for a main crop. Another American kind, distinct and good, is Snowflake, which was selling last spring at 12s. per lb. Of course the stock is exceedingly limited, but as it is a large cropper it will rapidly increase. Snowflake resembles the better known Breese's Prolific in the haulm and shape of the tuber, but the latter instead of having a pink skin is of a brownish-white colour. The tubers are large, long, flat, and handsome, the flesh is very white and flakey, but it lacks flavour; still I consider it to be a valuable acquisition. Vermont Beauty also received a certificate at Chiswick last year, and is a first-class Potato; but this season it has exhibited a much stronger growth than last year, and has been later in ripening. The tubers are large, flattish-round in shape, and in colour the same as Flourball, but although a strong grower it ripens earlier than that kind, compared with which, too, it is a heavy cropper, and of much softer and better quality. It makes a fine exhibition variety. Last of the Americans is Compton's Surprise, a large late kind, having tubers, in colour much like those of the old Jersey Blue. The haulm is very robust, and needs plenty of space, and the produce is large. It is not a handsome kind, but will make a good field or cottager's main crop variety.

Turning now to some of our best home raised varieties, I will first allude to that very handsome round kind, the Rector of Woodstock, another of Mr. Fenn's seedlings that has been awarded a certificate at Chiswick. It ranks as a second early, and is a large cropper; the tubers are white, round, smooth, and very handsome, and of even table size. The flesh is of a yellowish white colour, and when well cooked it presents almost the perfection a table Potato, being mealy, soft, and of excellent flavour. It is also a capital exhibition kind. Model, is probably the best of Bell and Thorpe's seedlings, and is one of the handsomest of white round kinds; the haulm is tall, dark in colour, and rather late in ripening. The tubers are white, oval-round in shape, smooth and handsome, and good for exhibition. Of its table quality I cannot say much, but on dry soils it is fairly good. Webb's President is an old, but very excellent, second early variety, the haulm of which is rather dwarf and spreading; the tubers are very white, flattish-round in shape, and usually clear and handsome. It is first-class when cooked, and is altogether a most useful Potato. Blanchard, is a strong growing, round, white French variety, the tubers of which are large and handsome, the crown eyes being considerably splashed with purple. It is a good cropper, is of excellent quality, and makes a very distinct kind for exhibition purposes. Much like Blanchard, in the colouring of the tuber, is The Favourite, another of Mr. Fenn's kinds, but in shape it is more oval, and when cooked whiter, and more mealy. It is a good garden kind, the haulm being short. It is classed as a second early, and will well repay good cultivation. Waterloo Kidney is a distinct kind, the haulm of which is of medium height, and spreading. The tubers are large, white, and handsome, and of excellent quality. This is a capital variety for market, as the tubers are formed early, and are very white in colour. Perfection Kidney, is an early Lapstone and is the result of a graft of Yorkshire Hero into Fenn's Onward. It produces medium-sized and exceedingly handsome tubers, that are of first-rate quality. Excelsior Kidney is one of the finest forms of Daw's Matchless strain. It is a strong grower and does best in rather poor ground; the tubers are white, large, and very mealy when cooked. This kind also received a first-class certificate. New Cambridge Kidney is the result of a cross between the Fluke and Lapstone; it is a strong grower and a late ripener; the tubers are large, brownish-white in colour, and much netted; quality, excellent. Paterson's Improved Victoria is probably the best Potato Paterson has ever sent out, and is a first-rate kind for main crop; it is a strong grower and a heavy cropper. Of coloured round kinds the very best and handsomest purple is Scotch Blue, a dwarf-growing variety suitable for the garden; it is a second early and is a capital cropper; the tubers are pebble-shaped and handsome; flesh, white, and of excellent quality. Birmingham

Blue is a good pale purple skinned kind, and also a second early; the tubers are large, oval, and handsome; the flesh, white and of fine table quality. My last selection is Red Emperor, a kind now pretty well known on account of its extremely handsome tubers, which are usually pebble-shaped; flesh, white and of good quality. It is a heavy cropper and should be classed as a late second early kind. A. DEAN.

THE GARDENER'S FRIEND.

A CORRESPONDENT of the *Cultivator* has invented a useful little implement, which he has called "The Gardener's Friend." He says "It will make rows without a line, cross-check for planting Beans, Peas, &c., make holes for setting Beets, Cabbages, Onions, Strawberries, &c., any distance from 4 inches to 3 feet apart in the row, and will do it more easily, and in one-eighth of the time required by the old back-breaking plan. The instrument costs but little, and can be made in two hours by any person who can use a saw and axe. The following sketch shows its appearance. It consists of a wheel, made of boards, from 1½ to 3 feet in diameter, and 2 inches wide. The handles may be made of any desired length and pattern. On the edge of the wheel fix wooden pins 1 inch in diameter, wedge-shaped at the outer end, projecting 2½ inches from the rim. Bore holes 1½ inch deep and 4 inches apart around the wheel. In setting out Turnips, Onions, &c., leave all the pins in; for other plants, take out the pins as the distance apart requires. Operation: Decide on the distance you wish your rows apart, and stake off the distance at each end; wheel your Friend in position,



wheel across to the opposite stake, and you will have made a straight row, and the holes will all be made ready for the plants, in number from 50 to 1,000, according to length of rows, and all done in the time required to walk the distance."

The Drapers' Garden.—A draper states that the ground-rent of £15,000 per annum, which will be obtained by the Drapers' Company for their garden, is to be applied to the erection of a suitable building, in which to maintain and educate at least 300 girls and boys, children of poor clergymen, half-pay officers, and other professional men in indigent circumstances.

Ants in Dwelling Houses.—Several recipes for destroying ants have lately been given in the *Times*; Mr. Salter, of St. John's College, New Wandsworth, says:—Our kitchen was swarming in the summer time with ants, both winged and unwinged. Windows, tables, and floor were all covered with them. Observation told me that they came almost without exception from holes in the hearth, the heat being doubtless favourable to their generation. Objecting to being thus overcrowded with lodgers I did not want, I carefully poured some strong vitriol (sulphuric acid) down each of the holes, at the same time killing those who happened not to be at home. The dose must have proved fatal not only to the living, but also to all their eggs, for not an ant has since been visible indoors. Another correspondent recommends placing a saucer of weak rum and water, well-sweetened with coarse brown sugar, in any place frequented by the ants; into this, he says, they will flock by hundreds, and thus, to some extent at least, be destroyed. Any chink or aperture in the wood-work of the house, or of any cupboard or sideboard whence the ants are found to issue, may also be well peppered with advantage. Some years ago, says a third correspondent, at my house in the country a colony of ants established themselves under the kitchen flooring. Not knowing the exact locality of the nest, I endeavoured to destroy the insects with treacle, sugar, arsenic, &c.; but, although I slew numbers thus, the plague still increased. At last, bethinking myself that ants dislike the smell of tar, I procured some carbolic acid, and diluting it with about a dozen times its weight of water, I squirted a pint of the mixture through the air-bricks under the flooring, and my enemies vanished that day, never to return. It has always been successful. For crickets, &c., also, a little of this sent into their holes acts as an immediate notice to quit. Camphor placed wherever table linen is kept, is also said to drive away ants.

THE ARBORETUM.

ON PLANTING ON PEAT BOG.

By JOHN BLAIKIE WEBSTER.

THE planting of bog land not only claims the attention of the planter on account of the vast area which it represents both in Great Britain and Ireland, but also on account of the ever increasing demand for timber trees of home growth. Moreover, by reclaiming these boggy swamps, they would not only prove a source of revenue to the owners, but also have a beneficial effect in embellishing and improving the climate of the country. The present report refers to three plantations, or rather that portion of each plantation which is composed of deep peat or bog, and is situated in county Armagh, Ireland. The descriptive particulars of the bog previous to being drained and planted, are as follows:—The bog is about 60 feet above sea level, quite open and exposed to the weather from all quarters. It consists of deep, rank, fibrous peat, light brown in colour, formed by the remains of bog plants in an imperfect state of decomposition, caused by the excess of stagnant water which it contained, the whole pores being completely shut up, thereby excluding the action of the air, and rendering it cold, waterlogged, soft and shaking, and quite incapable of acting as the food of trees. It contains about 95 per cent. of combustible matter, and 5 per cent. of mineral matter or ash. No. 1 is a mixed Fir plantation, composed principally of Scotch Pine and Larch; that portion which consists of deep bog comprises an area of about 7 acres, and was planted in March and April, 1861. The principal arterial drain or main outlet is 33 feet wide at the surface of the ground, and the average depth from 8 to 10 feet, and the banks cut with a slope of 45°. It runs along the south-west side of the bog, and joins the Black water near Verner's Bridge, and falls into Lough Neagh, at Maghray. Commencing at the main outlet, the sub-mains were cut 8 feet wide at top, 2 feet at bottom, and 5 feet deep. At first an open channel was cut to allow the surface-water to run off; the drains were then gradually deepened to the required dimensions as the bog got dry and firm. These drains, as well as the principal arterial outlet, were cut several years before the smaller ones. The small drains were cut 3½ feet wide at top, 3 feet deep, and 18 inches wide at bottom, the distance apart varying according to circumstances from 12 to 24 feet. The whole of the peat brought to the surface in the course of excavating the drains was levelled out on the surface of the bog, and allowed to lie and drip, for one year before planting operations were commenced.

Claying and Planting.—In December, 1860, and January, 1861, the clay was brought and laid on the surface of the bog by means of a railway, capable of being wrought by manual labour. The rails are made in sections of 11 feet in length, and capable of being lifted and laid by a couple of men, one at each end. Then, by means of a turning-table, the waggons were directed to any point on the bog where the clay was wanted. The pits were then opened for the plants at a distance of 3½ feet apart, and in size from 12 to 14 inches on the side of the square. A couple of ordinary shovelfuls of clay was then laid down at each pit, and allowed to lie exposed to the action of the frost until spring. This work was commenced in the beginning of March, and finished in the beginning of April, 1861. The plants used were two-year seedlings, one year transplanted native Scotch Pine, and two year seedlings, one year transplanted Larch, the former about 10 inches, and the latter about 20 inches high; at the rate of 3,556 plants per acre, and in the proportion of two-thirds Scotch Pine to one-third Larch, with the exception of 100 plants, *Abies nigra*, about 10 inches high, which were planted here and there principally along the margins. In performing the operation of planting, each man was provided with a boy, and bag to hold his plants. The man mixed the clay and bog with his spade, and put about one-half of the mixed stuff into the pit; the boy at the same time preparing the plant by holding it in an inverted position in his left hand, while he disentangles and spreads out the roots with his right, he then places the plant in the centre of the pit, keeping the strongest roots to the south-west (as our strongest gales of wind come from that quarter), he then holds the plant in a perpendicular position, while the man, with his spade, lifts the stuff and places it on the roots of the plant, and tramps it firm with his foot. Any loose stuff which may remain he then gathers round the stem and gives it a second tramp, when the work of planting is finished. Owing to the softness of the bog, and the action of the wind upon the plants, moving them backwards and forwards, a good many of them got swayed to one side by the month of May. The plantation was then examined, and any plants that were blown over set up and trampled firm with the foot. In the beginning of June the plantation was examined a second time, and, with the exception of a few plants here and there that required a little tramping, all the others were established and making fine young growths. In bog-planting,

a matter of great importance, and one which ought never to be neglected, is that of keeping the plants in their proper position until such time as the roots get established in the ground. The present condition of the plantation is very satisfactory, the height of the trees, both Larch and Scotch Fir, average from 10 to 12 feet, and are in perfect health. The thinnings are generally sold to small farmers for fencing purposes, the Scotch Fir at 9d. and the Larch at 1s. per dozen. The average height of the *Abies nigra*, is 10 feet, present value 9d. per dozen. The relative progress and value of this portion of the plantation as compared with another portion planted at the same time, and from the same stock of plants, on clay loam, is as follows:—Average height of Scotch Fir, 12 feet; present value, 1s. per dozen; average height of Larch, 15 feet; present value, 1s. 6d. per dozen; average height of *Abies nigra*, 8 feet; present value 6d. per dozen. The chemical composition as well as the physical properties of the bog have now undergone a great change. The clay which was used at planting has not only added weight and firmness to the surface, but also added to its alumina, assisted decomposition, and rendered the whole surface a rich fertile bed for the roots of the trees. The growth of the trees since the formation has taken up the superfluous moisture, thereby rendering the whole of the 3-foot drains quite dry, and with the exception of the principal arterial drain and sub-leaders, none of the others have required cleaning out for the last five years. The bog has sunk about 2 feet since the formation. No. 2 is a portion of a mixed Fir plantation situated in the immediate vicinity of No. 1. The descriptive particulars of the bog previous to being drained and planted are the same as No. 1, and need not be repeated. The pits were opened the same size, and the same quantity of clay allowed to each pit as for No. 1. It was planted in March and April, 1862. The plants used were two-year seedling Larch and Scotch Fir, one year transplanted in a local nursery formed for that purpose on as exposed situation on the edge of the bog, the former about 20 inches high, and the latter about 10 inches high, and at the rate of 3,556 plants per acre, with the exception of one dozen plants *Abies Douglasii*, and one dozen plants Austrian Pine, the former about 12 inches, and the latter about 10 inches high. The Larch and Scotch Fir were planted in the proportion of two-thirds of the latter and one-third of the former per acre. The Austrian Pines and *A. Douglasii* were planted here and there merely by way of trial. The mode of planting was the same as that described for No. 1, the only difference being that the plants were brought fresh from the nursery each day as they were wanted, and inserted in the ground before their roots got dry. This proved to be a decided advantage, especially in early life, to that of having to bring the plants a distance from the public nurseries in spring. The plants made a fine start immediately after planting, and have continued in a healthy, vigorous state ever since. At the present date the Larch and Scotch Fir average from 10 to 12 feet high, and the thinnings have been sold at the following prices, viz., Scotch Fir, 9d., and Larch 1s. per dozen. Their relative progress and value, as compared with trees of the same age and species growing on sandy loam are equal. The Austrian Pines have attained an average height of 8 feet 6 inches, their progress and value, as compared with trees of the same species growing on a thin sandy soil are equal; present value, 6d. per dozen. The average height of the *Abies Douglasii* is 12 feet; present value, 1s. per dozen. Average height of the same species growing on clay loam is 10 feet; present value, 9d. per dozen. The trees growing on bog are well furnished with lateral branches, and the foliage of a dark green rich colour, whereas the trees on clay loam are not so well furnished with side branches, and the foliage much thinner, and of a yellowish colour. The present condition of the bog is the same as described for No. 1, and need not be repeated here. No. 3 is a series of plantations in the shape of long narrow belts, and situated upon the same property as the former. They were planted between the years 1846 and 1849 inclusive, the oldest portion being now twenty-five, and the youngest twenty-two years old. The descriptive particulars of the bog previous to being drained and planted are the same as that described for No. 1.

Draining.—The belts were laid off 20 yards broad, and a drain cut along each side 8 feet wide at top, 2 feet at bottom, and 5 feet deep. The bog was then dug 14 inches deep, and formed into ridges 5 feet broad, a small drain being cut between the ridges 30 inches wide at top, 12 inches at bottom, and 2 feet deep; these were cut at right angles with the side drains, and consequently had an outlet at each end. The bog was then allowed to lie for one year before being planted; the pits were opened the same size, and the same quantity of clay allowed to each pit as described for No. 1. The trees were planted at the rate of 3,556 plants per acre, and in the following proportion:—one-half transplanted Scotch Fir, about 10 inches high; one-fourth transplanted Larch, about 20 inches high, and one fourth common Spruce (*Abies excelsa*), about 10 inches

waterdrops work like magic under these hot suns, and the barren, high. These were planted as a mixture generally over the ground, with the exception of one small portion of a belt, 400 yards long by 20 broad, which was planted entirely with Larch. The work of planting was executed and finished in a similar manner to that described for No. 1. The plantations have been repeatedly thinned, so that the existing crops consist of about 600 trees per acre. The average cubic content of Larch per tree, in a portion of the plantation last planted, and which is now twenty-two years old from the date of planting, is 2 feet, at 10d. per foot=1s. 8d. The average cubic content of Larch per tree, the same age as the former, growing upon clay loam, is 2 feet 4 inches, at 1s. per foot=2s. 4d. The average cubic content of Scotch Fir per tree, the same age, and growing along with the Larch on bog, is 2 feet 3 inches, at 5d. per foot=11½d. The average cubic content of Scotch Fir, the same age, growing on clay loam, per tree, is 2 feet 4 inches, at 6d. per foot=1s. 2d. The average cubic content of Spruce Fir, the same age as the former, on bog, per tree, is 2 feet 3 inches, at 5d. per foot=11½d. The average cubic contents of Spruce Fir, the same age as the former, growing on clay loam, per tree, is 2 feet, at 5d. per foot=10d. The difference in the rate of price per cubic foot is owing to the inferiority of timber grown on bog, it being much softer, and not so durable, as timber grown upon hard ground; so that mere bulk does not always represent the true value. The bog, since the formation, has sunk about 2 feet, and presents a hard firm surface; the trees have taken up the sap from the bottom, thereby rendering all the minor cross-drains perfectly dry. The whole of the trees in the mixed portion of the plantation are in perfect health—not the least trace of any disease has ever been observed in them. That portion of a belt already referred to, which was planted entirely with Larch, is now twenty-five years old. The results, however, in this case are widely different from that of the former. The trees have been repeatedly thinned to allow room for their proper development, and are well furnished with lateral branches nearly to the ground; yet the whole group has a stunted, weatherbeaten appearance; the tops, for the most part, are bent from the south-west by the force of the wind; the foliage is thin, and of a yellowish colour; the bark is hard, dry, and brittle, and full of cryptogamic growths; the shape of the trunk is what is generally termed by woodmen "Carrot-grown"—that is, large at the butt-end, and not carrying up its thickness in proportion to its height. None of the trees, however, have been effected with ulcers, *Coccus laricis*, ground-rot, or pumping. One-third of the trees perished when young, one-third are now worth 4s. per dozen, and one-third contain on an average 1 cubic foot per tree, which is worth 10d. The average cubic content of Larch, the same age as the former, growing on clay loam, per tree, is 2 feet 9 inches, at 1s. per foot=2s. 9d. The bog here was dug, drained, clayed, and planted in the same manner as that described for the other portions of the belts, so that the cause of failure cannot be attributed to anything in connection with the formation. The failure, however, may be accounted for in this way—first, want of shelter; and, second, the rank, fibrous bog was too cold and wet for the soft, tender roots of the Larch. Bog of this class, although thoroughly drained, yet by means of capillary attraction retains fully six times its own weight of water, and may be compared to a wet sponge. Trees, planted in such a situation, unless capable of taking up the superfluous moisture from below, are sure to perish; this the Larch is not capable of doing but to a small extent in comparison with some of the hardy evergreen tribe of trees, hence the cause of failure. The bog here has only sunk since the formation 1 foot; decay is making slow progress, and, with the exception of a few inches at the surface, it continues in a cold, raw, green state. The best plan in this case would be to stub up the whole trees, and replant the bog with a mixture of native Scotch Fir and Larch. As soon as the Scotch Firs get established, they not only afford shelter, but also collect and pump up the moisture from below, dispensing it in vapour through the air, thus accelerating decomposition, and rendering the bog capable of supplying the necessary food for the Larch.

Remarks.—First—In preparing bog for planting, it should always be drained and made ready at least twelve months before planting is commenced. The size and quantity of the drains must be regulated according to circumstances, and should be determined on the spot. As a general rule, however, the principal outlets should not be less than 5 feet deep. On exposed situations the drains near the margin of the plantation should be laid off in such a manner (if possible) that the dreaded blast shall not blow right across them, as the trees growing along the exposed sides of such drains have not sufficient room to extend their roots, and the consequence is, that in soft bog whole rows of such trees are often upset by the wind tearing up the side of the drain along with their roots, whereas, when the ends of the drains are kept to the blast this is prevented. It is, therefore, desirable that this should be kept in

view at the time of the formation. Second—Bog should not be planted in autumn or winter, as the cold and tannin which it contains destroys the roots before spring. The writer made several experiments by planting a number of Larch and Scotch Fir in the month of January, 1866, and found that 80 per cent. of the Larch and 50 per cent. of the Scotch Fir died. As a general rule, cold deep bog should never be planted sooner than March or April. The writer has practised this plan with perfect success for the last ten years, and has never found it necessary to beat up or replant any of the plantations so treated during that period. Third—Large plants are objectionable in bog planting, as, from the softness of the bog and the height of the plants, they are easily upset by the wind, and require too much labour and attention to keep them in an upright position; and, if this is neglected, the result is, that when the tree begins to grow, the leader naturally takes an upright direction, thus forming the stem into a semicircular shape, thereby rendering it comparatively worthless. Two-year seedling plants, one year transplanted, are the best; transplanting has the effect of giving a better and more fibrous root, as well as a stout, well-furnished stocky stem.—*Highland Society's Transactions.*

Azara microphylla.—One of the neatest of evergreen shrubs known, and one which will be most welcome in our gardens, as it is nearly or quite hardy in our climate, is the above named Azara. It has, in fact, stood out unharmed for the past five years, at Coombe Wood, where it is cultivated by Messrs. Veitch & Sons. The Azara microphylla is a native of Valdivia, where it is found at an elevation of 3,000 feet. It has received a first-class certificate from the Royal Horticultural Society, and is, undoubtedly, one of the best plants of the hardy class which has been introduced of late years. It is of shrubby habit, growing 8 or 10 feet high, with spreading or drooping branches, which have a peculiar fan-shaped mode of development, exactly adapting them for training against walls. The foliage is exceedingly neat, but dense, of a dark shining green, and a bluntly ovate figure, the margins being toothed. The flowers are inconspicuous, so that the beauty of the plant must be sought in its densely-set glossy foliage. We know of no plant which could be more appropriately introduced to cover a wall, where a neat clothing is required, than this Azara, and there is little doubt, from the experience gained at Coombe Wood, that in such sheltered positions it would prove hardy in most parts of the country.—*Florist.*

A Portuguese Pine Forest.—The road northward from Leca lies through the vast Pine woods which form so broad a zone along the Portuguese seaboard. The Pine of Portugal, is as a rule, the fast-growing *Pinus maritima*, very like our own Scotch Fir, and quite as ugly a tree when young. In some places the more picturesque Stone Pine is found, but it is of slower growth, and notwithstanding the greater value of its timber and the use as food of its Filbert-like cone kernels, it is little cultivated. The commoner Pine grows rapidly in poor soil, and fine trees are often seen with their roots in mere sand. The Pine forest is in general monotonous and unpicturesque, for the trees are always cut before they reach the dignity of "two ton timber," and the side branches are lopped year after year to within a yard or two of the tree top. The traveller passes league after league of straight-stemmed Pine, and wearies for the sight of a green field or Vineyard. The Pine forest, too, as in other countries, is silent and deserted: blackbirds, jays, and magpies are the only birds commonly seen or heard. Now and then a wood owl flits out of the shadow of an ivied tree, and the occasional tap of a woodpecker's beak, or his sudden laugh like cry, are sounds that a traveller feels to be a relief to the stillness. Human beings are rarely encountered, though the forest maintains its own peculiar population. Where the trees are rooted in anything but blowing sand, Gorse grows; and the cutting of it once in every three years affords some profit. Gorse in Portuguese farm economy is of great value, being used for the bedding of horned cattle, while the whole of the straw of the farm is used for their food; a system that has many obvious advantages, and others that are not so obvious. Every now and then, in the depth of the forest, a party of charcoal burners is met with, or of sawyers and carpenters, who encamp in the woods, fell and saw up the Pines, and make the boards upon the spot into doors, windows, and boxes, that are carried long distances for sale. If the forest is in the neighbourhood of towns, the fallen needles and cones are collected by women and children and carried in nets on donkey-back for sale as fuel. These are the purely forestal industries—the only human life connected with it—but this dreary desert of Pine wood has its oases. Wherever a brook crosses the forest the scene shifts immediately, and the watercourse is margined by narrow fields of Maize, Rye, and Wheat, or orchards of fruit trees reach on either side as far as the water can be made to flow. The stream itself is bordered with pol-larded Oak and Chestnut trees, over which Vines are trained. The

dusty soil is turned by it into fertile meadow land. The silence of the forest is exchanged in an instant for a concert of woodlarks and nightingales, and the refreshing coolness of the water-laden air and the green shadow of deciduous trees are positively delicious to the traveller who has passed through the shadeless forest and breathed the dry, over-sunned air, pungent with the peculiar odour which the Pines give out.—*New Quarterly Review*.

PYRUS TORRINGO.

THIS forms a bushy shrub with a somewhat pendulous habit. It bears rose-coloured flowers in profusion, which are succeeded by very small fruit that ripens in September and in the beginning of October. It is red when ripe, but quickly assumes a reddish-brown colour, and has a sharp sourish taste. This shrub was introduced into Europe from Japan, a country of which it is, probably, a native. It is



Pyrus Torringo.

increased by grafting it on any of the stocks usually employed for Apple trees, and it may also be raised from seeds.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Best Time to Prune Evergreens: W. E. S. The end of February or the beginning of March is the best time to prune common Laurels, Portugal Laurels, and all evergreens that are liable to suffer from severe frost in winter. Ivy may be clipped at the same time, or almost at any time.

Do Conifers Enjoy Manure? H. D. We do not believe Conifers require either manure or carefully chosen soil if the climate is well suited to them. But decayed farmyard manure may be used without danger and with benefit in poor soils. Subsequent top-dressings of thoroughly decayed manure will further benefit the trees.

Evergreens for Walls: S. H. You might try the following, which will clothe the wall in question for a considerable height:—*Crataegus Pyracantha*, *Azara microphylla*, *Berberis Darwinii*, *B. stenophylla*, *Escallonia* in variety, *Lardizabala biterminalis*, *Ilex* in variety, *Ceanothus papillosus* and others, *Euonymus radicans*, *Ilex latifolia*, *Cotoneaster microphylla*, and *Magnolia grandiflora*.

The Dunkeld Larches.—The following note, copied from a board near the tree, refers to the largest of the two original Larches growing in the grounds of Dunkeld Palace, at the west end of the Cathedral:—"*Larix europæa*. From Tyrol. Planted in 1733; circumference in 1872, at 3 feet from the ground, 17 feet 2 inches. Height, 93 feet 10 inches; and contains 423 cubic feet of timber." There are many other fine Larch trees in the grounds at Dunkeld, but all are much inferior to the two just alluded to.—M.

The Pepperidge Tree (*Nyssa sylvatica*).—This is a very fine tree in the autumn. If anyone doubts it, let him go over to Prospect Park, in Brooklyn, not far from the stone cottage, on the south side, and he will have an opportunity to review his opinion, and to wonder why it is that one of the most magnificent colour trees of the American forests is so little known or introduced into decorated grounds. It ranks among the very first in merit, and stands among the very last in use.—H. W. BEECHER. [The *Nyssa* is a hardy tree, somewhat over the middle size; the leaves turning to a brilliant crimson in autumn.]

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Hardy Flowers, Alpine Plants, and the Wild Garden.

WHILE the late autumn flowering plants still gladden the eye and give interest to the herbaceous border, the great majority of its occupants have already had their summer growth levelled with the ground, or are in a condition for that operation. Now, it strikes me that a word or two, as to what may be considered by many a very simple process, will not be out of place. Be it remembered that Nature's mode of removing the haulm is a gradual one, viz., by the ordinary process of decay, extending, in most cases, through the entire winter months. Admitting at once that, where neatness and trimness is an essential point, it will not do to follow Nature's lead too closely; nevertheless, we may take a lesson from her, and that, too, with advantage. The lesson is this—never to cut down too close to the ground, but leave sufficient length of the old stems that they may readily be bent to one side. Such stems are almost invariably hollow towards the base, and not unfrequently constitute channels whereby decay, owing to the continued presence or accumulation of water therein, is conveyed beyond the ordinary stem into the very heart of the root-stock. From this cause alone many a valuable herbaceous plant has been lost; therefore, though not absolutely necessary in all cases, it is well to act up to it as a rule. Another bit of advice I would give, bearing on the same operation, is, that the knife used for the purpose should always have a sharp keen blade. I know the supposition generally prevalent is that any old knife will do, but such is not the case. In many of the better class of herbaceous plants, the buds, upon which depends next year's floral display, are densely arranged on a somewhat fleshy root stock immediately below the surface of the ground, nor is this root-stock always tough; hence, when a blunt knife is carelessly applied to the old decayed stem, the jerk intended to remove the decayed part is liable to break off the crown at the same time, and thus leave a blank in your border beauty for the next year. In the wild garden this operation should always be left to Nature herself; let there be no cutting down until a general clearance takes place in spring. In many of our coarse-growing vigorous plants there is a beauty, even in decay. The giant-fluted stems of some of our Umbelliferae are like monumental effigies of the past. I remember once seeing a striking engraving representing the important part which these plants play in the winter scenery of a Siberian forest, and the most fitting comparison I could draw was that they resembled the "valley of dry bones;" it may be a weird fancy on my part, one that, possibly, Gustave Doré would share in; but, nevertheless, it had a beauty—albeit that beauty was of the past—of death and decay.

Cremation in the Garden.—Naturally, where herbaceous plants are cultivated in quantity, the material thus cut away is considerable. What then is to be done with it? Here, without hesitation, we recommend "cremation," for this especial reason, that, with the dead tops, very often quantities of seeds are removed, and if these be consigned, as they generally are, to the rubbish-heap, they do not perish, but yield a bountiful crop in whatever part of the garden such rubbish may be ultimately utilised. My own plan, and one from which experience shows that undoubted advantages are to be gained, is to reserve all the haulm from the herbaceous borders as a basis for starting a fire, say about the beginning of November; a few days will consume a large quantity of this refuse; but by a prior arrangement all the summer's weeds and border rakings may be deposited in close proximity to where the crematory process is to take place, and by gradually banking up the fire thus formed with this refuse, it may be retained sufficiently active for a month or six weeks, during which time it will have consumed a year's accumulation, and leave some tons of ash and burnt soil; the rough stones, of which there is sure to be a bountiful supply, may readily be separated by screening, and the residuum has a value of its own, whose use I will explain by-and-bye. No seeds or insect eggs will survive such an ordeal as this, that is one important advantage gained, and in the dry burnt soil you have one of the most powerful disinfectants there is; that is a no less important second advantage, and on these, I think, the value of the process fully establishes itself.

Too Vigorous Growth.—Amongst herbaceous plants, some are of a rather too roving disposition, in fact, regular monopolists, given to poach on their neighbours territories; these must be kept within bounds, and how is this to be most effectually accomplished? The natural suggestion that comes uppermost to anyone, even to any ordinary gardener's mind, would be to chop round with the spade, so as to reduce a plant, say, a yard in the diameter of its underground development, to 1 foot in diameter. Yes, it appears very feasible, but remember in all such peripatetic plants, that the outer part of the circle represents the vigorous progeny. What then is to be

done? Select a vigorous tuft from the outer circumference, and then with one of Park's steel forks (the only implement that should have a free pass into an herbaceous border) fork out all the remainder, turn the old soil well over, adding, at the same time, a good dressing of manure, and re-plant your tuft where the original plant stood. The reason I mention this so early in the season is, that now, when the ground is dry, the operation may be performed in one half the time, and with double the efficacy; this remark applies especially to heavy soils, where, if this absolutely essential process be attempted in mid-winter, the limits of a plant you wish to curtail will only be found to have extended all the farther for the operation. Bulbs, such as the genera *Scilla*, *Muscari*, *Hyacinthus*—all spring or early summer bloomers—and even the Lilies, though impatient of frequent disturbance or removal, will gradually become weaker and ultimately die out, if not subjected to an occasional, say a triennial, overhaul. This ought to be done at once, before even the young roots are formed, for they are sure to receive damage in the operation, and the result in the spring will be but too plainly visible in the weakly short-lived blossoms they will produce; in fact, under ordinary circumstances, their re-planting ought to have been three weeks or a month earlier than this, but the uncommonly dry summer has held the majority of bulbous plants in an unusually quiescent condition; with the recent stimulating rains, however, no time is to be lost, as the newly acquired moisture will soon produce that root development that it is desirable to anticipate.

Alpine Plants.—In all rockeries, and amongst delicate Alpine plants, continuous war must be waged against weeds, such as *Sagina procumbens* and *Cardamine hirsuta*, as also, our common Chickweed; all of these increase at this season with great rapidity, and, what is more, are certain to produce perfect seeds until almost mid-winter, whereby not only is present damage done, but the guaranteed perpetuation of the mischief is provided for in the seeds deposited on the surface of the soil ready for early spring development; the removal of these, and, in fact, all weeds, requires continuous and careful supervision on the part of the successful cultivator. A like watchfulness is necessary as regards snails and slugs, whose appetites appear to increase in a compound ratio with the diminished vital activity of the plant, hence the seriousness of their depredations at this season of the year. The season is almost too far advanced for increasing herbaceous or Alpine plants by division, excepting, of course, such as the mossy *Saxifrages*; these do better now than earlier on, but cultivators must be careful, as a general rule, not to disturb the roots at this season; for, if they do, so surely will they meet with disappointment. The time for repairing damages and restoring root action, after the mutilation which must necessarily attend the process, is too limited; and a severe November frost will, at least in heavy soils, leave them on the surface of the ground. However much it may be against the grain of the cultivator, this operation must be performed either in August or, better still, in the beginning of April, when the renewed vigour of Nature is capable of repairing the most severe damages. In speaking of weeds, I omitted to mention the Lichen-like *Marchantia*, which in some places is a perfect pest, increasing, as it does, by spores developed in the little umbrella-like tops, by minute bulbils proceeding from the cup-like processes on their upper surface, and by fragmentary divisions. It not only covers over the entire surface of the soil, but smothers all the dwarfer-growing plants. In the former case, it prevents the free and beneficial action of the air on the soil; in the latter, its action, though mechanical, is none the less objectionable. The best mode of checking its growth is to arrest its early development by constant watchfulness, by removing the soil wherever it appears; and if, in this process, the roots are bared, replace that removed by a surfacing of fresh soil, submitting the old to the crematory process before described, which alone will effectually destroy the various modes which Nature has provided for its increase.—J. C. NIVEN.

The Flower Garden.

The frequent falls of rain and the mild genial weather experienced during the month of September have rendered the flower garden more gay than it has been at any other period during the present season, any deficiency of bloom being amply compensated for by the increased brilliancy of the foliage of various sub-tropical plants, Tricolor-leaved *Pelargoniums*, and such plants as the *Coleus*, *Iresine*, *Alternanthera*, &c., together with such shining-leaved succulents as the *Echeveria metallica*, *E. secunda glauca*, *Sedums*, and *Sempervivums*; but it must, nevertheless, be borne in mind that the season is very considerably advanced, and that a degree of watchfulness is necessary as regards tender species of plants which it may be desired to preserve until another season; on that account, mats, or, what is better, pieces of frigid dome, should be held in readiness to cover up beds of such plants whenever danger is apprehended, until they can be lifted and potted, and placed under glass; and it is of great importance that this should

be done before they have been injured by frost. Young plants of the various sorts of variegated and Tricolor *Pelargoniums*, which have been bedded out during one season, will be found to make excellent stock for bedding out during the following summer; they should, therefore, be taken up and potted at once.

Preparing for Spring.—Wherever a system of spring bedding is contemplated, the arrangement of the flower garden should by this time be decided upon; and wherever *Hyacinths*, *Tulips*, and other bulbs, are intended to occupy any of the beds, such bulbs should be planted as soon as possible, but not before the beds have been duly prepared for their reception by being deeply dug, and by the introduction of a liberal dressing of well-rotted hot-bed manure or good leaf mould. This is absolutely necessary in cases where *Pelargoniums*, and other gross-feeding plants, will be found to have considerably exhausted the soil of the beds. The splendid effect which can be produced by a judicious arrangement of early-flowering *Tulips*, and other spring bulbs, is very remarkable, and should be seen in order to be duly appreciated. It is, nevertheless, inadvisable to plant the beds of the flower garden with bulbs alone; as, if this is done, it must necessarily leave the beds destitute of verdure for some considerable portion of the season; and where such beds are (as is frequently the case) seen from the mansion or residence, this is objectionable. But this may be readily obviated by carpeting or planting the surface of the beds with some of the many dwarf, hardy, early flowering, herbaceous plants, such as the *Aubrietia purpurea*, *græca*, and *Campbelli*. These are amongst the most effective and continuous bloomers of all spring flowering plants; also, *Alyssum saxatile*, *Arabis alpina*, *lucida*, *præcox*, and *purpurea*, *Bellis perennis*, i.e., the various varieties of double *Daisies*, *Gentiana acaulis*, *Hepaticas* of sorts, *Iberis corifolia* and *sempervirens*, several early flowering varieties of the *Iris*, *Myosotis azorica* and *disitiflora*, spring-flowering *Phloxes* of various sorts, *Polyanthus*, double and single *Primroses*, *Saxifrages*, *Sedums*, *Sempervivums*, *Silenes*, *Tussilago Farfara* variegata, *Veronica alpina* and *incana*, *Vincas* of sorts, *Viola cornuta*, *cornuta alba*, *lutea*, *Mauve Queen*, and *Perfection*, together with double and single *Violets*, various kinds of bedding *Pansies*, double and single *Wallflowers*, &c. Beds, which may have been planted in the "carpet" style during the summer may, with some trifling alterations, be rendered nearly as attractive and interesting throughout the winter and spring months as they were in summer, by merely substituting suitable hardy species of plants for such tender sorts as cannot exist in the open air during winter, such as the *Alternanthera* and the *Coleus*; while, at the same time, many of the plants used for this purpose during summer are perfectly hardy, and may be allowed to retain their position undisturbed—such as the Golden Feather *Pyrethrum*, *Stellaria graminea aurea*, Golden-margined *Thyme*, *Sedums*, and *Sempervivums*. Even the *Echeveria secunda glauca*, so useful for this style of planting, although not altogether hardy, will nevertheless take little or no harm from an exposure in the open air during a somewhat mild winter, and suffers generally more from damp than cold.—P. GRIEVE, Culford, Bury St. Edmunds.

Trees and Shrubs.

The present is a very suitable time to plant trees and shrubs of all sorts. The soil is now in a moist and favourable condition, and the plants have ample time to become somewhat established in the soil before very severe weather is likely to set in. In planting ornamental Coniferous trees upon lawns and elsewhere, it is of the utmost importance to make a judicious selection of sorts, having due reference to the character of the soil, as well as to the effect which it may be desired to produce; and, in the distribution of the various species, the habit of growth, and the appearance which each plant will be likely to present in the course of a few years, should be taken into consideration. As lawn trees, the various species of *Picea* are unsurpassed, and conspicuous among them is *Nobilis*, with the rich glaucous bloom which covers its young shoots, and the dark or blue-green shade of its older leaves; also *Nordmanniana*, with its fine habit of rapid growth; while there can be few more handsome lawn trees than a well developed specimen of the Douglas Fir, or *Picea Douglasii*. But this beautiful tree is seldom found to succeed well on a very light or poor gravelly soil; while *Picea Pinsapo* with its fine dark green foliage, appears to make itself at home in almost all sorts of soils. *Abies Albertiana*, is also a valuable ornamental tree, and bears a considerable resemblance to the Hemlock Spruce, or *Abies canadensis*, and generally succeeds well in either a light or heavy soil, while the latter species cannot be induced to grow in a light dry soil. The *Wellingtonia gigantea* is also a most useful lawn tree and should be extensively planted, it succeeds well in all kinds of soil; as does, generally, the beautiful *Cupressus Lawsoniana*. Considerable diversity of habit and general appearance exists, however, among seedling plants of this species, and the best habited plants should,

consequently, be selected for the most prominent positions. Amongst hardy trees and shrubs, with variegated and coloured foliage, the variegated form of the *Wellingtonia gigantea* is well worthy of attention; as is also the *Thuopsis dolabrata variegata*, which is equally hardy as its green-leaved congener, and the beautiful gold-striped Yew, or *Taxus baccata aurea variegata*, and its improved variety *Elvastonensis aurea*, by far the brightest of all the gold or silver-striped sorts, more particularly during the winter months, when it is hardly surpassed by the more symmetrically habited *Taxus baccata Barroni femina*, the most free-growing of all the golden-striped Yews. The *Taxus fastigiata variegata* is the exact type of the well-known Irish Yew with golden-striped foliage; and when these plants, and many others, have become better known and are more extensively used, they are calculated to give a charm to the landscape, or at least to the grounds surrounding country residences, which can hardly at present be contemplated. In addition to the various species of ornamental and variegated plants which have been already alluded to, mention may be made of some of the many varieties of the beautiful Japan Cypress or *Retinospora*. *Retinospora pisifera aurea* is a golden variegated plant of great beauty, and forms a lovely object upon the lawn, where it contrasts agreeably with dark-foliaged plants of various sorts. So exceedingly graceful is the fine feathery foliage of this plant, that it is considered by some as one of the most beautiful of the many recent introductions from Japan. A writer in *THE GARDEN* of last week (see p. 320), recommends the substitution of this plant for Box as garden edgings, &c., and has proved its adaptability to that purpose, finding it to be perfectly hardy, and bearing clipping with impunity. When it becomes sufficiently plentiful (which is perhaps already the case) to be used for this purpose, its very pretty appearance will doubtless cause it to be preferred to Box, or to most other plants for forming marginal lines to shrubby borders, &c., and to be used in various ways in connection with dressed grounds. *Retinospora ericoides* is also a very pretty shrub, and its leaves in winter become of a violet or reddish colour, which renders it very ornamental. There are also many varieties of the gold and silver variegated Hollies, which ought to be extensively introduced into the pleasure grounds, producing as they do, a truly grand effect in winter, and lighting up the landscape as if by magic; while associated with them may be Aucubas, of various kinds, and the pretty Japan Spindle tree, *Euonymus japonicus aureus variegatus*, and *latifolius albus variegatus*, &c. A judicious selection of such trees and shrubs as has just been mentioned, together with many others of equal value, as ornamental plants, skilfully handled, will go far to render the surroundings of a country residence nearly as attractive and beautiful in winter as in summer.—P. GRIEVE.

Annuals for Autumn Sowing.

No time should now be lost in getting these sown. A light soil, not over rich, suits them best. When the plants are up they should be thinned, so that every plant may stand clear of its neighbour. The great enemy of autumn-sown annuals is damp; but, by sowing in light soil in an open spot, and thinning well, they will be more hardy than they otherwise would be, and better able to withstand damp and frost. If they are to be transplanted into beds or borders in the autumn they may, in that case, be allowed to stand more thickly in the seed-beds. The best plan to deal with slugs, which sometimes injure autumn-sown annuals, is to look over the beds, night and morning, and to destroy as many as possible. By laying Lettuce or Cabbage leaves among the beds, and looking them over every morning, slugs may be kept from doing much damage. The following is a short list of kinds most suitable for sowing every autumn, viz.:—*Alyssum maritimum*, white, sweet-scented, $\frac{3}{4}$ foot; *Bartonia aurea*, bright yellow, $1\frac{1}{2}$ feet, tender; *Calliopsis*, yellow spotted, 1 foot; *Candytuft*, purple and white, lilac; *Clarkia pulchella* and *alba*, rose and white, $1\frac{1}{2}$ feet; *Collinsia bicolor*, purple and white, 1 foot; *C. grandiflora*, blue and purple, 1 foot; *C. verna*, blue and white, 1 foot; *Erysimum Perofskianum*, orange, $1\frac{1}{2}$ feet; *Eschscholtzia californica*, yellow, 1 foot; *Eutoca viscida*, dark blue, 1 foot; *Gilia tricolor*, white lilac and purple, $1\frac{1}{2}$ feet; *Leptosiphon densiflorus*, lilac and white, 1 foot; *Limnanthes Douglasii*, white and yellow, $\frac{1}{2}$ foot; *Lupinus nanus*, blue and white, 1 foot; *Malope trifida grandiflora*, crimson, $1\frac{1}{2}$ foot; *Nemophila insignis*, blue, $\frac{1}{2}$ foot; *Saponaria calabrica*, bright pink, $\frac{3}{4}$ foot; *Silene pendula*, pink, 1 foot; *S. ruberrima*, carmine-rose, $\frac{1}{2}$ foot; *Virginia Stock*, red and white, $\frac{3}{4}$ foot; *Venus's Looking-glass* (*Specularia perfoliata*), blue, lilac, and white, $\frac{3}{4}$ foot. Sweet Peas may be sown at the end of this month or the beginning of November, and by selecting a sheltered border and staking them as soon as they are 2 or 3 inches high, they will commence flowering early in spring. This is one of our most useful plants for supplying cut flowers, but it is seldom that one sees it grown during winter. It is, however, perfectly hardy, and may be sown now as well as in spring.—Q.

Indoor Fruit Department.

A good holding deep loam, fresh from an old pasture, is acknowledged to be the best material for Peach trees; and, indeed, for almost all sorts of fruits. It may be dug up and carted into the borders at once, without any storing. After long experience of a soil whose basis is clay, I have found that it maintains the vigour of the trees for a long period of years, with an annual top-dressing of cow-dung, and the occasional removal of a few inches of effete soil immediately on the surface of the border, and substituting fresh loam. Now is a good time to renovate Peach-tree borders; well ripened Peach trees may be entirely lifted out of the borders, and new borders made with the material just indicated, taking the precaution of seeing to the drainage, and making the soil compact as the border is being filled up. The roots should be spread out carefully on some of the finest of the soil, again covering with more of the same material; well treading the whole down, and finally giving a good watering. Trees planted in this way may be forced with the certainty of success, provided they have had their wood thoroughly ripened. The weather continues, on the whole, favourable to the ripening of Melons, but they must now be assisted with a little fire-heat, if possible; fruit in cold unheated pits will have a struggle to finish well; all sun-heat must be husbanded, short of actually burning the plants, and the fruit must be elevated on flower pots. Improved Victory of Bath and Colston Bassett are good sorts late in the season, and we should not like to be without the old Golden Perfection; Little Heath, notwithstanding its bad name, is one of the very best for late work, as it positively does best with rather cool treatment. All Strawberry plants had better now be placed in cold pits, in order that their roots may be protected from cold rains and frost; if all cannot be stored in pits, at least those required for very early forcing should have the benefit of this protection, and see that the drainage of the rest is thoroughly clear; if not standing on boards they should occupy a high and dry position on ashes or gravel; if much cold rain should ensue, the pots may be turned over on their sides for a time. There is no better Strawberry for very early forcing than the old Black Prince in small pots. Cucumbers may yet be planted for winter; indeed, layers may be taken yet from old plants, pegging a good-sized branch, with three or four leaves on it, into a 48-sized pot. In a week such layers will be fit to sever and plant out. If a pit has been got ready for their reception, they will grow and fruit at once. A bottom-heat of about 75° will be sufficient, the moist autumn weather which we are experiencing being altogether favourable for Cucumber growing. The temptation to over-crop must, however, at present be resisted, or failure may come at Christmas and afterwards.—W. D., *Canford*.

Vines and Pines.

Late Vineries need now but little attention. Lady Downes, Alicantes, and one or two others, which retain their foliage fresh and green until far on in the season, should have such leaves as are in contact with the fruit removed, as they collect and retain damp about the berries, an evil now to be guarded against. A free circulation of dry air, which can only be obtained by having a clear space about the bunches, is what is required. However unnatural this clearing off part of the foliage may appear to be, no injury seems to result from it. See that former directions as regards Vines and Vineries for early starting are attended to. If the roots of Vines intended for starting about the beginning of November are chiefly outside, a heap of fermenting material should be placed on the border, spreading it out as far as the main feeders are supposed to extend. Leaves and litter are the best material for this purpose, and the bed or covering should be about 3 feet in thickness. A covering of boards, glass-sashes, or some such protection, placed on the top of all, keeps damp and cold out, and the bed thus protected retains the heat much longer than it otherwise would do. If forcing is to be commenced about the first of next month, it is best to put this covering on a week or two before that time, in order that the roots may feel the influence of the heat by the time when they are required to start into activity. Be it remembered, however, that fermenting material is but a poor substitute for hot-water pipes. The system of having Vine borders heated with hot-water pipes is the best as far as early Grape-growing is concerned. The hot-water pipes should be laid in a chamber resting on the concrete at the bottom of the border; with these, valves should be connected, so that the heat may be regulated as desired. The application of heat in this way is certain, but it should never be used longer than is absolutely necessary. Some prefer having all the roots of early Vines inside the house, but, when thus confined, they soon become exhausted, and the fruit on such Vines is never, at any time, so good as on those with roots unrestricted. As regards Pines, these should now receive a general shift. The plunging material will, doubtless, have fallen away considerably since young plants were put into it early in

summer. It is not advisable to touch beds, containing Queens, for early starting at present. When they are about to be started is the time to stir them up, and to give the plants, if necessary, a little more room, but, beds in which Smooth Cayennes, Jamaica, and similar kinds are growing, should be renovated. Collect all those showing fruit, and, if possible, give them a small house or pit to themselves, as they require to be kept a little hotter and damper than non-fruiters. Where a compartment cannot be spared, place them at the hot end of the house. Keep such plants as have not started altogether, and to these add a good portion of fresh fermenting material, as a bottom-heat of 85° or 90° will start many of the full grown ones into fruit immediately, and this fruit will come in nicely before the early Queens. Take the opportunity of washing the glass and wood-work when the beds are cleared, so that everything may be clean and trim throughout the winter.—J. MUR, *Chewfords*.

Hardy Fruit.

There is no better month in the whole year for the making and renovating of fruit-tree borders than October. Early in the month, and if possible before much rain falls, all exhausted worn out trees should be destroyed, root and branch, if past recovery; the soil should be removed bodily to a depth of 2 feet, and new borders made. If the trees are capable of renovation, there are two general methods of proceeding. One is to take the tree up entirely, cutting away all decayed or useless roots, and carefully preserving all sound and useful ones. Let these be bound round with a wet mat, or some other good non-conductor to keep the roots from the light and air. Then proceed to remove all exhausted soil to a depth of 24 or 30 inches, and substitute maiden loam, sweet and fibry—just such as you would prefer for pot plants, only heavier; for fruit trees like a loam somewhat adhesive, and what cultivators term clayey. That, with skilful top and bottom management, is the soil to yield fine Peaches, Nectarines, Plums, Apricots, and Pears. Spread the roots through this in a horizontal direction, flood them in, and should dry weather prevail, check evaporation from the wood and dying leaves, by frequent overhead sprinklings, and the roots will start at once and get a safe foothold of the new ground before winter. There still remains a middle course for the renovation of exhausted trees—neither a new border nor uprooting, but something between the two, managed thus—proceed to remove all the exhausted soil possible, and also all weakly diseased roots, without, however, disturbing more than is inevitable either of good soil or sound roots. Then fill up and in among the roots with maiden loam as before, starting all the fresh roots to the best advantage in the fresh soil. Sometimes the effect of this course is the sudden conversion of worthless trees into models of health and fertility. There is less risk than in transplantation, and less loss of time than in renewals. The skilful practitioner can tell at a glance after inspecting the top, and more narrowly scanning the bottom, whether a tree is likely to recruit its energies or not by this partial renewal of its root-runs. As to the forming of new borders, these dry seasons compel us to examine the very foundations of our practice. As the result of such severe scrutiny, I have been forced to the conclusion that drought—not water—is the natural enemy of the fruit grower throughout a great portion of England, including the whole of the eastern counties; therefore, on the gravel, chalk, sand, and other mixed and porous sub-soils, drainage may safely be dispensed with. It is unnecessary, if not injurious, and the space that it occupies may be more profitably filled with porous loam. When the soil is too adhesive the mass of the border may be drained, that is, its whole texture may be rendered pervious to the passage of water by one-sixth of its whole bulk being composed of burnt clay, lime rubbish, or road sand. The drainage will thus be placed in the border, not under it, and in the border is the best place for it. Further, no fruit-tree borders must either be made or mended in wet weather.—D. T. FISH.

Kitchen Garden.

Every garden, however small, should have its warm specially-prepared border for bringing forward early vegetables and salads; the soil, if not naturally deep and rich, should be made so, and, as the space devoted to this purpose will be small in proportion to the rest of the garden, there should be no difficulty in doing this—I am assuming that all gardens are well drained, either naturally or artificially, and that, therefore, no stagnant water can remain in the soil to lower its temperature. A well-sheltered border, 50 or 60 yards long and 10 or 12 feet wide, with a deep, well-drained, thoroughly-enriched soil, will furnish a large amount of early produce. Such a border should, if possible, be raised above the natural level, with a considerable inclination to the south. For the purpose of shelter only, a good thick hedge is, in some respects, superior to a wall; but, where neither are available, a fence of reeds, that can be put up in a short time by any handy labourer at a trifling cost, will be found of very great advantage. If

the fence is adopted, and if it is of considerable length, the ends should be closed in, and one or more divisions, in proportion to its length, should be added for the purpose of breaking and distributing cold currents that always rush along the sides of any obstacle. In large gardens, where there are long straight stretches of wall, temporary screens, starting at right angles from the wall and extending the full width of the border, would be of very great advantage early in spring. In many gardens south-wall borders are used for early vegetables; and, where these are of considerable width, there can be little objection to a few feet along the front being lightly cropped. It is, however, at best, but a species of compromise requiring very careful management if the trees on the wall are to be kept in health. I am convinced that many Peach and Apricot trees have been ruined by this close cropping and digging, destroying their surface roots. It is probably true that few gardeners are so favourably situated as to be able to carry out, to the full, their ideas in this respect; but I am certain that the less wall borders are cropped the better it will be for the wall trees, unless, as I have just observed, the borders are wide—say, from 12 to 15 feet wide; then, of course, the trees and vegetables might divide the border between them, with a possibility of doing justice to both. There are many things that might be brought forward on such a border as I have endeavoured to describe, much earlier than is possible where no such position is available. A portion of it may be planted now with Lettuce and Endive, for use in early spring after the frame crops are done; the remainder should be thrown up in a rough condition, for the present. I will, however, return to this subject again as the season advances. Make a last sowing of Cauliflowers in boxes under glass; sow a pinch of Veitch's Autumn Giant, with the other kinds, for coming in in July and August. Where green Mint, Tarragon, Balm, &c., are in demand all through the winter, a few roots of each may be taken up now and potted and pushed on in heat when necessary. Whenever frost is expected some light material, such as "frigidome," or netting, should be at hand to cast over full grown Lettuces to preserve them. A very thin covering will keep off a good deal of frost in autumn, before the earth has parted with its heat.—E. HOBDAY.

Curious Artificial Colouring of Flowers.—The "Journal of the French Central Society of Horticulture" has some curious observations on the artificial colouring of natural flowers. Flowers naturally of a violet colour when exposed to the fumes of a cigar assume a green tint, all the more decided in proportion to their original brightness. This is well exemplified in the case of the violet *Thlaspi* or *Iberis umbellata*, and of the *Julienne*, or *Hesperis matronalis*. The alteration in colour is due to the ammonia of the Tobacco. Starting from this point the Italian professor, L. Gabba, has made a series of experiments in order to determine the effect of ammonia on the colours of various plants. Pouring a little ammonia into a plate, and placing a funnel over it, the Professor inserts the flower in the tube of the latter. In this way blue, violet, and purple flowers become of a fine green colour; deep carmine-coloured flowers, such as Pinks, become black; white blossoms yellow, and so on; but the most curious effects are produced on parti-coloured flowers, such as red and white when the former colour is changed to green and the latter becomes yellow. Another remarkable example was that of the *Fuchsias* with white and red flowers, which became yellow, blue, and green. When the colours have been thus changed, if the blossom be dipped in pure water it will retain the artificial colour for several hours, and will afterwards return gradually to its natural tint. Another curious observation of Professor Gabba is that *Asters*, which are naturally without scent, acquire an aromatic odour under the influence of ammonia. The same flowers of a violet colour become red when sprinkled with water containing nitric acid; and if enclosed in a wooden box and exposed to the action of hydrochloric acid gas, will in six hours become of a fine carmine colour, which they will preserve if first dried in a dark place and kept dry and in the shade.

Wet Boots.—What an amount of discomfort wet boots entail, and how well we all recall the painful efforts we have now and then made to draw on a pair of hard-baked ones which were put by the fire over-night to dry. Once on, they are a sort of modern stocks, destructive of all comfort, and entirely demoralising to the temper. The following plan will do away with this discomfort:—When the boots are taken off, fill them quite full with dry Oats. This grain has a great fondness for damp, and will rapidly absorb the least vestige of it from the wet leather. As it takes up the moisture it swells and fills the boot with a tightly fitting last, keeping its form good, and drying the leather without hardening it. In the morning, shake out the Oats and hang them in a bag near the fire to dry, ready for the next wet night, draw on the boots and go happily about the day's work.

ON TEACHING BOTANY TO THE YOUNG.

By F. E. KITCHENER, F.L.S.

Is botany, or is it not, a valuable scientific subject for younger boys? In 1867 the report of the sub-committee of the British Association on Scientific Education in Schools, selected botany, together with experimental physics and experimental chemistry, as the three subjects with foremost claims. Mr. Wilson's essay, in "Essays on a Liberal Education," endorsed this opinion, and, by the vivid picture there drawn of possible botanical teaching, contributed to make the world of teachers and of parents expect more out of botany than perhaps experience has shown can be got out of it. A reaction on the subject seems to have set in. Nothing, however, is more unfair than to credit a subject with more than it really deserves, and then to let it suffer from incipient reaction, because it does not fulfil the general expectation. It is worth while, therefore, to see exactly what training botany can fairly profess to give, and to enquire also how far it may fail to do so from not being taught in the proper way. To prevent misapprehension, it will be well to define the pupils to whom the subject is supposed to be taught. I am assuming a class of boys, of from ten to fifteen years of age. In these boys, we may assume the powers of writing and spelling to be, in many cases, feebly developed; but, on the other hand, no one will deny to them quickness of eye, and a natural itching to use their fingers and their knives. Such boys are well suited to take in a subject, which, without requiring any mathematical knowledge, like elementary physics, or any long chain of reasoning like geology, asks at first only for careful observation, comparison, and memory. But again, is our object in these classes to make them botanical collectors, or educated men? If the two objects clash, undoubtedly the latter is the main object; and here at once is a danger—the teacher is probably himself a botanist and in his enthusiasm to make proselytes of the one or two kindred spirits in his class, he may be led to adapt his teaching to the few, and neglect the general culture of the many. In this paper, then, we need not consider the few born naturalists: they will easily be led on by walks and talks till they become botanists for life in heart and soul; but we consider the ordinary boy who will not give you any time out of school that he can help, and whose educational food must be put under his nose, or else he will never see it, much less swallow it. What then are the advantages of botany as it can be taught in classes to such boys as I have described? The main advantage, of course, is that it exercises the powers of observation and comparison. A Dandelion is to a boy a familiar object, but when he has noted all the points that he may be led to observe in its root, stem, leaves, and marvellous head of blossoms, he has learnt that it may be worth while to look more closely at the things around him; in any case, whether he may think it worth while to use it or not, he certainly has improved his power of doing so if he chooses. Even a stupid boy cannot have failed to learn to observe, for he has had to pull his flower to pieces, his own flower and with his own fingers. A clever boy, in the course of dissecting three or four flowers, has learnt a good deal more: he has not only himself observed his own facts, but he has been led to sort them into groups, in fact, to colligate them, and is being unconsciously led up to making the right inductions from them; then the colligated bundles of facts having been stored up, the teacher strikes the match of induction and all the facts blaze into new light: more often the cleverer boys want no match, and the only difficulty is to prevent the fire bursting out before the rest of the class are ready. This exercise in observation and colligation alone seems to be enough to make botany a subject; but the exercise is spoilt if the books put into the boys' hands do all the colligations beforehand. An ordinary botanical text-book handed out to a boy, is like giving him at once a translation for his Greek play, or a key to his arithmetic. He there finds all the botanical facts neatly tied up into bundles, each labelled with its own sesquipedalian epithet. He is not asked, for instance, to examine plants and see what variation is found in Nature with regard to the cohesion of stamens, but is told stamens are either syngenesious or monadelphous. This fault it is for the teacher to remedy—let him from his previous knowledge of the distinctions to be brought out, choose a succession of plants for examination in such a way as to bring successively each of the chief variations under his boys' notice, and then, when they have mentally begun to colligate their facts under heads, *a*, *b*, and *c*, let him supply the terms (or better, their English equivalents), and thus crystallise the knowledge which has been till now in solution. A second great point in favour of botany over other subjects is that whatever advantage may be expected from it can be got at once—no introduction is necessary. The first lesson in botany may be one of the most fruitful, and even as an educational exercise half a dozen lessons may make quite an appreciable difference in a boy's habits of mind. The great drawback to getting the full advantage is the present terminology: what with the difficulties of learning and spelling, the major portion of the time is not given to observation at all, and whereas the

boys would of their own common sense have supplied epithets of their own, and rapidly caught up English names of things, they are weeks picking up the few terms necessary for filling up one of Henslow's schedules. A favourite objection to botany is that it is a complex science of chemistry, physiology, and other subjects presupposing some knowledge. True: but the part of botany which young boys should be taught need not presuppose any special knowledge. In an elementary course of botany, it is doubtless unwise to separate structure from physiology and classification, and it is quite true that boys of the age I am speaking of will be unable to take in the chemistry and physics which underlie the one, or the logical excellence which underlies the other. But while it is difficult to teach young boys how different animals digest, it is easy to show them how they get at their food; and so it is easy to show boys what are the requisites in a plant to secure its obtaining light, heat, and food; and the fertilisation of its seeds and then to show the existence of structure to meet these ends. So again, without taking up classification as a whole, the really natural groups of what we charitably call the natural classification cannot fail to strike the boys themselves, and the teacher, following the order of the growth of classification in the world's history, should at once give a name to the class, and so fix it in the minds of his boys. I should not advise, therefore, that the teacher should attempt to cover all the ground: let him confine himself to what he can teach thoroughly, and that because the boys can take it in thoroughly. Later on in their school life, those who are really taking up the biological side of science, and who have presumably been weeded out by natural selection, may be brought through a second course of botany. They will then know enough of chemistry and physics to fully appreciate the laws of growth, and will value such a text-book as Henslow or Asa Gray, where they can lay their hand on whatever they want in its right place. The difficulty which besets teachers in all subjects, is the pressure put on them by examining bodies to cram and not to educate. This pressure is felt very strongly in botany; if a schoolmaster makes his course of botany really an education to his boys, he yet may leave them unfit to pass an examination in the dry bones of botany, which too often fill up the whole of an examination paper. Examining bodies, even those examining boys under sixteen, seem rather to enforce that the boys should have flitted over many plants and dabbled in many names, than that they should have ever made one single plant their own, by getting up all they can about it. But a good teacher may comfort himself in this; a pupil who has been taught to describe a few plants well, can always describe a new plant at sight, and the practical portion of the paper, the least attempted and worst answered according to my experience as a local examiner, will always bring the well taught boys to the surface. Let us end with a few maxims which will guard against ineffective teaching. 1. No plants should be discussed without, as far as possible, every boy having his own specimen for dissection.—2. No observation should be recorded till every boy in the class has seen it with his own eye.—3. To ensure (2), the classes must be small, or else the lazy boys will evade the teacher, and take their observations second-hand. Much, however, may be done by an assistant-teacher assisting the lecturer by passing from pupil to pupil directing them in dissection.—4. Terms should never be supplied till the things themselves to be named are familiar, and then the English equivalents should be preferred. In fact, such terminology should be chosen as will be picked up at once by the boys.—5. The flowers chosen for examination should be chosen with a purpose, and the ideas of the boys should not be confused, or their memories overlaid, with too many flowers at once: choose your typical forms and keep impressing them on the memories of your boys, till they can schedule a plant of a typical family from memory without mistake.—6. With care and good teaching there is then much to be made of botanical teaching; but whatever is taught must be taught thoroughly. The early part must be known well; it is almost as fatal to neglect the first lessons of botany as it is not to know the earlier propositions of Euclid.—*Journal of Education.*

Wet Coal.—People who prefer wetting the winter's store of coal to the dust on putting it into their cellars do not, we believe, generally know that they are laying up for themselves a store of sore throats and other evils consequent on the practice. But so it is said to be. Even the fire-damp which escapes from coal mines arises from the slow decomposition of coal at temperatures a little above that of the atmosphere, but under augmented pressure. By wetting a mass of freshly broken coal and putting it into a warm cellar, the mass is heated to such a degree that carburetted and sulphuretted hydrogen are given off for long periods of time, and pervade the whole house. The liability of wet coal to mischievous results under such circumstances may be appreciated from the fact that there

are several instances on record of the spontaneous combustion of wet coal when stowed in the bunkers or holds of vessels. And from this cause, doubtless, many missing coal vessels have perished.—*London Medical Record.*

Acreeage of our London Parks.—Hyde Park contains 380 acres; Kensington Gardens, 290; St. James's and the Green Parks together, 154; Regent's Park, 403; Victoria Park (before the late small addition), 280; Battersea Park, 230; Greenwich Park, 174; Crystal Palace (as originally laid out 400 acres, but reduced to) 168; Alexandra Park (as at first laid out 500 acres, now reduced to) 192; Clapham Common, 190; Wandsworth, 302; Wimbledon, 628; Barnes, 120; Epping Forest, 510; Kennington Common, 15; and Camberwell, 55 acres.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

OCTOBER 7TH.

THE exhibition of Fungi held by the Royal Horticultural Society at South Kensington, is generally one of the best supported meetings, if we except those held in the midst of the London season, and although on this occasion one or two of the principal exhibitors of former years were unable to be present, the distinctive character of the meeting was well maintained. Only two exhibitors, Mr. English, of Epping, and Mr. Austin, of Reading, competed for the prizes offered by the society for edible and poisonous Fungi, yet the collections of each were exceptionally good, both containing many new and rare species. Not the least interesting part of the exhibition was the beautiful water-coloured drawings of English and Alpine Fungi, made by Mrs. Chapman, 36, Lancaster Gate. These were specially alluded to by the Rev. M. J. Berkeley in his usual annual lecture on mycology, and greatly admired by the visitors present.

Orchids.—Messrs. Veitch & Sons staged a beautiful group of new and rare Orchids, amongst which were nearly a dozen hybrid varieties of garden origin (see THE GARDEN, Vol. IV., p. 479). Amongst these we noted a splendid plant of *Cypripedium Sedenii* (eleven spikes); two fine plants of *Cattleya exoniensis*, the colouring being especially rich, and the petals most delicately frilled along their margins. *Cypripedium Harrisonianum* is one of the finest of all Lady's-slippers, and a fresh healthy plant of this variety bore three fine flowers. *Cattleya Fausta*, one of the best of Mr. Seden's acquisitions, was staged in fine condition, and deservedly obtained a first-class certificate; and a noble plant of *Cattleya Dominii* bore five or six fine spikes of its soft rosy flowers. *Cattleya Devonensis* and *C. hybrida picta* were also staged in good condition. A fine mass of *Calanthe Veitchii* in flower deserves especial notice on account of its flowering so early; and this suggests how much may be done by a little judicious treatment in the way of forcing, and retarding the flowering season of Orchids, and thus ensuring a longer season of bloom. *Cypripedium Dominicanum*, *C. Ashburtonae*, and a new seedling unnamed, were also shown. The last-named is a cross between *C. Fairrieanum* and *C. insignis*, and its appearance goes a long way towards proving *C. argus* to be a natural hybrid, as we had supposed. A fine mass of *Dendrobium McCarthiae*, bearing sixteen flowers, was much admired; while *Vanda cærulea*, *Odontoglossum grande*, *O. Roezlii*, *Oncidium bifolium majus*, *Galeandra minor*, *Peristeria elata*, and *Cattleya superba* made up a very important part of the exhibition. Mr. W. Maule, of Bristol, showed a group of cut Orchids, including *Saccobulbium Dayanum*, the curious *Sarcanthus paniculatus*, *Cypripedium caudatum*, *C. Fairrieanum*, *Aerides suavisimum*, and others. A fine plant of *Odontoglossum (crispum) Alexandræ* came from Mr. Toll, of Manchester, with a branched spike fully 4 feet in length, and bearing thirty-three flowers.

Fruit.—The most noticeable specimens of fruit exhibited were three splendid Pines from the Royal Gardens, Frogmore. These consisted of a fine pair of smooth-leaved Cayennes, weighing together 19½ lbs., and a Charlotte Rothschild, weighing 8 lbs. 13 ozs. The system of culture pursued is to plant the suckers out on beds composed of Oak leaves, and where it can be adopted the plan has much to recommend it. Mr. W. Paul staged a large cluster of his new white Grape, Waltham Cross, in excellent condition, the flavour being all that could be desired. This fine late Grape well deserves a place in every Vinery. The same exhibitor also showed a fine cluster of a new white Grape named Winter Muscadine. Mr. Harrison Weir sent a seedling black Grape grown in an ordinary ground Vinery, and named The Artist. The appearance of the Grape is good, and the flavour excellent, but the committee thought it ought to be shown again. Mr. E. Bennett, gardener to the Marquis of Salisbury, at Hatfield, sent three scarlet-fleshed Melons of good flavour. Two fine dishes of Pears named Beurré Superfin, and Beurré des Charneuses came from the Society's garden, Chiswick, together with some large Gourds. Mr. J. Lewis, gardener to W. T. Price, Esq., Tibberton Court, Gloucester, sent three dishes of Apples for naming. These fruits were fine and appeared to be Catshead, Emperor Alexander, and Blenheim Orange. A dish of large Salway Peaches, rather past their best, came from Mr. B. Blythe, of Woolhampton. Mr. Peter Grieve, of Culford, sent a new seedling Black Grape, with large oblong berries, and a new seedling Pear, named Lucy Grieve, the latter being scarcely ripe enough for judging. Rev. G. Kemp sent a fine Pear, named Pitmaston Duchess d'Angoulême, which, however, was scarcely ripe. A fine dish of Quinces came from Mr. J. Baker,

Shirley Road, Southampton. Mr. W. Maule, of Bristol, brought specimens of his new *Pyrus (Cydonia) Maulei*, which is said to be a highly ornamental flowering shrub, as well as a useful fruit for preserving. Mr. Woodbridge, of Syon House, sent cut sprays of a pretty Hop-leaved Vine, and Mr. Marchant brought branches of *Laurus nobilis*, abundantly furnished with berries.

Miscellaneous.—Messrs. James Veitch & Sons exhibited a very effective stand of the weird-looking Japanese *Chrysanthemums*, the flowers of which are far more ornamental, from an artistic point of view, than those of the common kinds. They are well deserving of culture, as they furnish an agreeable variety. Amongst those exhibited, Elaine is a fine flower of silvery-whiteness; James Salter is a good rosy-lilac; Bismarck, a yellowish-brown; and Blanch of Castile is a fine full flower, the long florets having a peculiarly graceful frill-like appearance. Messrs. E. G. Henderson & Son showed a good collection of Pompones or Bouquet Dahlias in excellent condition, the colours being both bright and distinct, while the flowers are very useful for furnishing either stands or vases during the late autumn months. Several bushy plants of *Pyraeantha (Crataegus) japonica*, exhibited by the same firm, were much admired, being densely laden with bright scarlet berries, which looked all the more effective among foliage of a deep and pleasing green tint; it does not appear to be sufficiently well-known that this highly ornamental shrub luxuriates in town gardens, and that its vivid fruit forms a charming contrast to the foliage of the common Ivy, or other evergreens with which it is easy to associate it in many different ways. In the Chelsea Botanic Garden we recently saw a beautiful effect produced by this plant in the manner here indicated. Grafted plants, grown in the bush-like form above alluded to, also make useful decorative plants for either halls, corridors, or conservatories during the winter months, especially as they are easily grown on for this purpose in the open border, and can be taken up carefully and potted after the berries are coloured. Mr. W. Paul, of Waltham Cross, sent six stands of cut Roses in excellent condition for the season; indeed Mr. Paul generally manages to wreath the year with Roses quite irrespective of the seasons, and surely no flower is more welcome. Mr. J. C. Crassel, Fairy Croft Nursery, Saffron Walden, showed two or three excellent stands of French and African Marigolds, blooms of the latter being nearly five inches across, and very double. Mr. Marchant, gardener to General Hankey, Sandgate, brought some cut branches of the feathery *Tamarisk (Tamarix plumosus)*. Mr. R. Porter, gardener to Mrs. Benham, Syon Lodge, Isleworth, sent some cut spikes of good seedling Pentstemons and nearly a dozen varieties of Tropæolums, some being very rich in colour. A plant of *Rhododendron aureolum* of dwarf bushy habit, with yellow-margined leaves, came from Messrs. E. Jackson & Sons, of Woking.

First-class Certificates were awarded to the following interesting novelties:—

Kniphofia (Tritoma) McQuinn (Green).—A dwarf and beautiful addition to a well-known genus of hardy and half-hardy garden plants. It may be described as a miniature *T. Uvaria*, but little over a foot in height.

Vitis heterophylla, var. *lunifolia* (Woodbridge).—This is a beautiful variety of a well-known Japanese Vine, which well deserves general culture for the sake of its fruit-bearing sprays, which are very ornamental, the berries being the size of large Peas, and of a pale blue colour.

Begonia Royalty (Clammers).—This is a dwarf compact seedling, belonging to the now popular tuberous-rooted section of the genus. The leaves are of good substance, and of a rich velvety green colour, the flowers being nearly inches across, of a rosy-scarlet colour, and very freely produced.

Cattleya Fausta (Veitch).—A beautiful addition to the genus, figured and described at p. 435, Vol. IV. It well deserves general culture, as it is a well-tried novelty, and apparently very free both in growth and flower.

Dahlia, *Sarah McMillan* (Rawlings).—A fine well-formed flower, of a bright lilac-purple colour, likely to become popular as a show variety.

PERSONAL.

MR. MARNOCK is engaged in forming a public park at Sheffield, and in remodelling one at Birmingham.—Mr. Meston is to form the new garden on the Thames Embankment, west of Hungerford Bridge. The frequency with which new public gardens have been formed of late years is a good sign.—Mr. John Gibson, jun., is in charge of Hyde Park, Kensington Gardens, and the parks under the same management, during his father's much-regretted indisposition.—Our able correspondent, Mr. R. Gilbert, who has been for some time superintendent of the fruit and forcing gardens to the Marquis of Exeter, at Burghley, is now superintendent of all the gardens there.—Mr. James Drewett, after twenty-four years' service, retires from the management of the Denbies, Dorking. His foreman, Mr. James Beesley, has been appointed his successor.—Mr. James, twenty-six years gardener to the Earl of Dartmouth, at Patshull, retires.—The terrific explosion, which alarmed all London on last Friday morning, took place very near the house of Mr. Edwards, the superintendent of the Regent's Park. He and his family had a narrow escape from death. The house was almost destroyed, yet happily Mr. Edwards received no further injury than some severe cuts and bruises, and it is understood that the other members of the family escaped with nothing worse than a fright.—Mr. Burbidge is engaged on a work on the Daffodils, in which all the species will be represented by coloured plates.—The successor to Mr. Smith as gardener to the Earl of Gainsborough, Exton Park, is Mr. Atherne, who has for some years filled the post of foreman at Arundel Castle.—Mr. Triman, of the British Museum, and Professor Bentley, of King's College, are preparing for the press an illustrated work on medical botany. A work of this kind, from such accomplished and painstaking authors, is looked forward to with much interest.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

A NEW METHOD OF ARRANGING PLANTS.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

PARTI-COLOURED flowers and plants have long been favourites with horticulturists, but a method of cultivating certain Ericaceæ and other plants, by mixing in a growing state the individual specimens of different varieties of the same species, so as to resemble living bouquets, is in some cases more pleasing than more usual arrangements, and is a style that might be more generally practised, not only for effect, but for the purpose of economising space. In villa gardens, which are generally limited for accommodation, this mixed system has often, from necessity, to be resorted to, so any hints tending to further this end may possibly prove useful. One plan of proceeding is the planting together of different coloured varieties of certain Ericaceous plants, so as to form one specimen. A very pleasing appearance is produced by mingling the flower-spikes of the white and red varieties of the *Erica cinerea*, and also the white with the other varieties of *E. cinerea*, which are now very numerous, and which all flower about the same time. The white and pink varieties of *Erica Tetralix* blend well together, also the *Erica Mackayana* and *E. Watsonii*, mixed with the white *E. Tetralix* are very effective. The white and red *Erica vagans* is suitable for the same purpose, as well as the *Calluna vulgaris*, particularly the varieties, *Calluna vulgaris Alportii*, a beautiful red-coloured one, and the *Calluna vulgaris Hammondii*, a pure white sort, being kinds which flower at the same period, as well as numerous others of the same class. With plants flowering at different times, space may be saved, and the same tuft, although composed of two or three varieties, can be made interesting at different periods, depending, of course, on the number of varieties employed. The purple and white varieties of the *Daboecia polifolia*, when mixed, produce an effective plant. The *Daboecia polifolia versicolor*, a variety recently introduced, has the two colours white and purple on the same branch, and even some of its individual flowers are often seen variegated. This beautiful and useful variety is a striking natural example of this bouquet style of cultivation. To carry out the system of mingling colours so as to produce the best effect, the plants ought to be put together in the rooted cutting condition (as recommended in THE GARDEN for December, 1872, and again for August 15, 1874), and worked on as one plant; the branches and roots are thus allowed to get more naturally and freely through each other; all must grow on as one plant, and all must be annually clipped over. When layered plants are put together for this purpose, the twigs do not properly intermix, and the plants, when in flower, are apt to show the two varieties distinct, although in juxtaposition. Such blended colours are very effective in rock-gardens, besides being highly pleasing for clumps, or general border cultivation. In all cases the varieties employed must be exactly of the same height and of the same habit of growth; if otherwise, the harmonious effect will be lost. The mixing of colours to economise space is also very suitable for certain Chrysanthemums, such as the early dwarfs, when grown in pots, of which numerous varieties are now to be had in cultivation; and also with the later-flowering sorts, provided always they are naturally of the same height when in bloom. Cinerarias are very telling subjects when so treated; two or three varieties planted in the same pot, and worked on as one plant, are certainly very pleasing to the eye. In regard to the last-mentioned plant, this system has long been practised in the well managed garden at Inglis Green, Slateford, near Edinburgh, and is now adopted in many gardens, taking care, of course, that the heights of each variety employed should entirely correspond, so as to bring the corymb of mixed-coloured flowers exactly on the same level. The same system holds good with the Chinese Primrose, and many other florists' flowers now cultivated in villa gardens can be treated in the

same way with beneficial results. Local horticultural societies would do well to encourage this system of gardening, as many amateur cultivators with limited plant accommodation can thus grow a much larger number of varieties in a given space than they otherwise could do. Those who have seen Cinerarias treated in this way will, I am sure, agree with me as to the pleasing effect produced by this mixed system of cultivation.

MORNING OPENING OF KEW GARDENS.

EVERY now and then, for some years past, an agitation has sprung up for the earlier opening of Kew Gardens to the public; and we see from the newspapers that the periodical ebullition has lately taken place, and possibly is still going on. Under present arrangements the gardens are opened at one o'clock, and the reform wanted is, that in future the hour of opening should be nine or ten. At first sight the demand seems reasonable. Of two things there can be no doubt, viz., that it would be very pleasant to get in earlier, and that it is a very disagreeable alternative, either (if we know the hour of opening) to have to give up a visit to Kew because the hour is too late to suit us; or (if we do not know it), to arrive at eleven or twelve, and find that the gardens will not be open until one. Although the hour of opening ought to be known by this time all over the kingdom, still new people are always growing up who have not yet learned it, and old people forget what they have learned, and we believe that no day (suited to a visit to Kew) passes without several persons arriving before the hour of opening, and having either to wait or go away—a mishap which one feels the more that there is nothing at hand to assist in whiling away the time (unless, indeed, we have a fancy for tombstones, when we may make a short pilgrimage to the spot where Gainsborough lies in Kew Churchyard). Of course, we all know that there must be some strong reason for such an unusual, and what is apparently such an illiberal and incongruous a rule. It is unusual, for we believe it is the only institution of the kind where this late hour of opening is adopted, unless it be in some small country towns, where the curator of the museum attends gratuitously, and naturally limits his hours of attendance to suit his own convenience. It is unnatural, because in museums within walls it matters little at what hour you go, but in a botanic garden, and especially in such a one as Kew, where science is combined with the beauties of the country and the charms of Sylvan scenery, the morning and forenoon are the hours when these are seen to best advantage, and it is apparently illiberal, because it inconveniences large bodies of the people, and restricts and curtails their enjoyments; and, lastly, it is in the highest degree incongruous, because, in other respects, liberality to the public has been more attended to at Kew than in any similar establishment. It is the only one in this country that is open on Sunday, and in no one is the care for the instruction and enjoyment of the public more conspicuous. The kind of objections to an earlier opening will readily suggest themselves to the reader. It is obvious that there is a great difference between a museum and a botanic garden. The work of the museum is done in the laboratories; there the birds are stuffed and the snakes put into spirits, and the specimens are only displayed after they are completed. In a botanic garden the preparation has to be done in the same place in which the subjects are exhibited. The growing (analogous to the stuffing) is always going on; both bird and plant have to be kept clean, but after the one is on its perch it rests there, whereas, it is not so with the plant, it has to be watered and re-potted, and attended to in various ways. In a word, the laboratory of a botanic garden is mixed up and combined with the show rooms themselves. It is pretty plain that if the working operations of the zoologist had to be conducted in his show rooms there must be some interval set apart during which the public could not be admitted, and much more stringently than in the botanic garden, inasmuch as the work is more delicate and the space more confined; as soon as the public is admitted the zoologist would have to give up work; not so with the cultivator. There is space for him to do much of his work and for the public to look on too. It has been found possible to do so at the Jardin des Plantes and in the Botanic Gardens at Edinburgh and elsewhere. True, nowhere else have

the directors to deal with such vast numbers of visitors as at Kew, but that is a special difficulty, and special contrivances might be adopted to meet it. The great difficulty is the houses. It is clear that the public cannot be admitted to them while the necessary work in them is in progress; and, as they must be all open to the gardeners who are passing to and fro from one to another, it is also clear that one that is in full operation cannot be kept shut to the public, while another not so much occupied might be opened. All must be treated alike, and as large a staff of police watchers would be required for partial opening as entire opening. The expense of police is very great at Kew; we have heard the cost of complying with the petition for early opening estimated at between £3,000 and £4,000, but that was on the footing of a double staff, and on the assumption that as complete a staff should be supplied for the early hours as for those after one o'clock. But it rather appears to us that this is unnecessary. We think that some middle course might be hit upon. At present one portion of the garden is railed off, inside of which no smoking is allowed, but outside of it a cigar is permitted. Within this charmed circle are all the houses, except the new temperate house. Might it not be possible to open the outer part of the garden at ten o'clock, or even earlier, and keep the inner ring closed until one as at present. This would leave only the temperate house out of bounds, and as it is all in one block and under one roof, it might be closed and work go on inside. We believe that opening to this extent would satisfy everyone. For the man of science there is ample employment for the whole morning in running over the out-door collection in the outer part of the garden, and for the general public there is also sufficient occupation. The attitude taken by Dr. Hooker in regard to this question, has been worthy of all commendation. Were the concession granted, it would, undoubtedly, render the fulfilment of his duties much more difficult and laborious, but no opposition to it proceeds from him. How could any? It is merely an extension of the liberal policy indicated by his father, and followed out by himself. So far as the officers of Kew are concerned, it is a mere question of expense, and in that category we venture to think that the increased trouble to the officials ought to be considered. If the necessary means be given them, they can carry the alteration into effect. But as it does resolve itself into a question of means, it would be well for the petitioners to qualify and modify their application so as to reduce the cost of complying with it to moderate dimensions, and we think we have shown how this can be done.

THE NARCISSUS AS A BORDER FLOWER.

ONE of your correspondents recently alluded to *Narcissus poeticus*, the common Pheasant's-eye Daffodil of gardens, as being well worth general culture, an opinion which I can readily endorse. It is one of the most beautiful and fragrant of all hardy flowers, and poets and painters alike have done it honour for ages past. It should find a place in every shrubbery border; or, grown in masses, it forms a beautiful object on the lawn, or such portions of it as are not mown until the autumn. It does not, however, appear to be generally known that bulbs of this species force well if they are taken up late in the year, and potted in any light rich soil. Another remarkable fact is, that these bulbs flower better the second year they are forced than the first, so that they should not be thrown away after the first year's crop of flowers is obtained, as is generally the case with bulbs that are forced. Early flowers thus obtained are valuable, as in beauty and fragrance they hold their own with the choicest of all cut flowers. The sort generally used for forcing is *N. tazetta*, a very variable plant, native of the south of Europe, some of the most beautiful and distinct varieties being found on the borders of the Mediterranean. This is the plant so largely imported and sold by our nurserymen about this season of the year, under such names as *Staten General*, *Grand Primo*, *Soleil d'Or*, and *Paper White*. The colour of the flowers varies from pure translucent white to rich golden-yellow, while the corona or cup of some forms is of a rich orange tint, bordering on vermilion. This plant, although generally forced in pots, flowers well in glasses of water, like the *Hyacinth*, while it does well planted out on a warm, moist, sheltered border, and so treated flowers later than the forced plants, so that a succession of flowers may by this latter plan be obtained. A striking peculiarity of this and all the other species of *Narcissus* is, that their flowers last fresh a long time in water. I have had cut spikes in a vase of water for a fortnight, or even longer, and the latest

flowers were then quite fresh. It was formerly the custom of some of the florists near London to grow beds of this plant (*N. tazetta*) out-of-doors for the sake of their flowers in spring, and the flower-spikes were cut from the plants as soon as the first buds had attained their full size. When so gathered, they bear packing better than when the flowers are fully open, and the blooms never fail to open out in succession when placed in water, and flower as well as if left on the plants, and even better, as the flowers suffer from the winds and rains of the spring months. Those who force these beautiful plants should retain the bulbs, and plant them out in a warm border after flowering, as, when so treated, they will in most cases flower well in after years. *N. pseudo-Narcissus*, the common yellow Daffodil, is supposed to be a native of this country, and with its many varieties (both double and single) is well worth border cultivation. It is capable of producing fine effects when planted in masses, a fact noted by several of our poets, from Herrick to Wordsworth, and all lovers of hardy flowers should not fail to read the celebrated ode to Daffodils of the last-named author, which is one of the most interesting and suggestive rural poems in the English language. *N. biflorus* is another reputed native, generally bearing two white flowers on a scape among its wax-like glaucous foliage. It is nearly related to *N. poeticus*, but is readily distinguished by the absence of the purple or crimson ring round the margin of the cup. *N. gracilis*, and its beautiful variety, *N. gracilis tenuior*, also resemble the last in the shape of the flower, and in having a saucer-shaped cup; but the colour is a clear yellow, and the leaves, instead of being glaucous and flat, are semi-cylindrical, and of a vivid shining green colour, nearly like those of the *Jonquil* section. *N. incomparabilis* is a stately species, well worth a place, its flowers varying from deep yellow with an orange-margined cup, to pure white with a lemon cup. The flowers are solitary, on stout scapes, 16 to 18 inches high, the flowers being about 3 inches in diameter. There are two or three very distinct and beautiful double-flowered varieties of this plant, the flowers of which are very showy, and these should find a place in every herbaceous border. One of these has white segments, partly encompassed in a glowing orange nectary or cup, and is the *Double Orange Phoenix* of old florists and gardeners. A yellow form, with a deep orange cup, is the *Sulphur Phoenix*; and there is another still paler form than either, very beautiful, although now seldom seen in cultivation. The flowers of these are nearly as double as the *Rose*, and so heavy that they require some support to prevent them bending to the earth. A white-flowered kind, somewhat similar to the last, has nodding white flowers, with a cylindrical cup; this is *N. pucilliformis* or *N. montanus* of gardens, and is interesting to botanists and amateurs on account of its flowers being rarely perfect, having often only three or four segments instead of six; and the drooping character of the flower is very distinct from any other species, and serves to distinguish it from the last-named plant. The gem of the whole genus is *N. triandrus*, a pale sulphur-yellow-flowered plant with from two to five flowers on a scape, and deep green rush-like leaves. This has recently been re-introduced to cultivation, and is one of the prettiest in the whole group. The segments of the perianth are reflexed so as to give the flower the appearance of a yellow *Cyclamen* or *Dodecatheon* rather than a Daffodil. The flowers of this species are very delicate in structure, yet it has proved to be one of the hardiest, and withstands sun and rain better than most of the others. *N. jonquilla*, the common *Jonquil*, is well known as a border plant, its bright yellow flowers being borne in clusters on slender scapes among a tuft of deep glossy green rush-like leaves. It forces well, and its fragrant flowers are always welcome for the flower vase in early spring. Nearly related to this plant, but with larger flowers, is *N. odoratus*, or *Campanelle*, a showy plant largely grown in some old market gardens for the sake of its deep golden sweet-scented flowers. Like the last-named species, it is often met with in the double state; but all its forms are beautiful, and it well deserves more general culture. *N. juncifolius* is a pigmy only an inch or two in height bearing two or three pale yellow flowers on a slender scape. The flowers somewhat resemble those of *N. jonquilla*, but the cup is very much larger in proportion to the size of the flower. It is not showy, but deserves a corner in every garden where choice hardy bulbs are appreciated. Of all the *Narcissus*, however, there are few better than *N. bulbocodium*, the *Hooped Petticoat* Daffodil of gardens, which often flowers almost before it frees itself of the surrounding earth, each flower glowing like burnished gold. This does remarkably well in pots for conservatory and greenhouse decoration, and it should be grown in quantity everywhere. Of all hardy flowers, if we except the *Broom*, we know of none of a richer yellow colour than this species. A variety (*N. monophyllus*) with white flowers comes from Algeria, but it does not grow so freely as the yellow-flowered form. All the varieties of this plant are tender, and often perish during cold wet winters unless protected by a mulching of dung or leaves.—*The Gardener*.

BEDDING VIOLAS AND PANSIES.

DURING the past season large numbers of these have been tried at Chiswick, and late in the summer, too late to fairly test the merits of the early-blooming kinds, the floral committee paid the collection a visit, and awarded certificates to the following, viz.:—Tyrian Prince, purple-self Pansy; Imperial Blue Perfection Pansy, blue-lilac; Blue-Bell Viola, bluish-lilac; Lily White Tom Thumb Pansy, pure white; Miss Maitland Pansy, white, with a veined eye; Mulberry Viola, mulberry-purple; The Tory Viola, large purple-blue; Chieftain Viola, lilac-purple; Dickson's Queen Viola, white, dark eye; Dickson's Golden Gem Viola, bright yellow; and Dickson's King Viola, light purple. Among these Golden Gem, is a rich yellow variety that presents considerable improvement on *Viola lutea grandiflora*. Still better, in my opinion, is Royal Sovereign, another of Dickson's varieties, the blooms of which are golden yellow, large-rounded, and produced in abundance. I am surprised that Miss Maitland received a certificate, as it sports badly, many of the flowers coming much splashed with purple, and of the four plants upon which judgment was passed at Chiswick one at least had all the blooms thus discoloured. I can but conclude that the certificate was intended for Delicata, which was growing next to it and which was, at the time of the committee's visit, in beautiful condition. Some varieties that are generally of superior quality were not quite in good condition just then, and of these none have been prettier than Corisande, the flowers of which are pale primrose-yellow. This is an exquisite kind, and gives a hue of colour hardly to be met with in any other bedding plant. Yellow Boy is meritorious as an early flowering variety, and is one which cannot be excelled for spring blooming. Blue Bedder is another very early kind which makes a capital spring bedder. For continuity of bloom, however, none can excel *Viola Blue Bell*, as it flowers at least three months longer than any other blue Viola in cultivation. Among other good kinds sent by Messrs. Dickson, were Queen of Lilacs, the flowers of which are of medium-size, opening pale purple and turning to lilac; Advancer, mauve flaked with blue, free grower; Vanguard, rich purple-crimson; and Alpha, blue with a small blotch, a free grower. From Mr. Cocker, of Dundee, have also come many fine varieties, too late, however, to have their merits fairly tested. Of compact white self Pansies, Mrs. Smith and Mrs. Sutherland are both good; Mrs. Carson has large deep blue flowers; The Member has blooms pale blue in colour, much like those of Blue King; Bon Accord and Keepsake are both of the same type as Mrs. Carson, and strong growers; the Shah was one of the most striking kinds; its flowers are large, round, and of good substance, and of a deep maroon-purple colour; Profusa is a large robust form of *Viola Magnificens*.

THE VARIEGATED CORNISH MONEYWORT.

THIS is one of the most charming novelties we have met with, even in these days of wide-spread taste for hardy variegated plants. The Cornish Moneywort is a modest little plant, long grown in Ferneries, and among Alpine plants, owing to its graceful form and interesting character as a British plant. Nevertheless, not possessing any brilliancy of flower it has never become a very popular plant. Its delicate fresh green, however, and the facility with which it grows in any place where hardy Ferns succeed, should make it more popular. We have seen it thrive vigorously in a London area, the plant falling down and draping the pot with a mantle of charming verdure. In a wild state it creeps about in shady places, the banks of rills, and like positions, along the western coasts of Europe, extending as far north as the southern parts of England and Ireland. It is found also in the Channel Islands. This new variegated form is likely to be much more popular; its leaves are prettily margined with white, and this marking seems, in all cases, regular. Our illustration, however, gives a good idea of the variegation and general character of the



Variegated Cornish Moneywort.

A. D.

plant. It is engraved from a small specimen brought under our notice by Mr. David Syne, manager of the Lawson Seed and Nursery Company, in whose Edinburgh nurseries the stock of this charming novelty is growing. It will, probably, in addition to the purposes for which the green *Sibthorpia* is grown, be found desirable for surfacing pots and baskets in the greenhouse and Fernery, and for concealing pots and other objectionable surfaces; its dense mantle of leaves keeping very close to the surface, and the growth being of such a nature that it will not rob the soil of the nutriment required by other plants.

THE WOOD OF THE DOUGLAS FIR OR OREGON PINE.

THE wood of this Fir is very strong, clean, free from knots, and straight in the grain, whilst the great lengths in which it can be obtained, straight and sound throughout, mark it out as well adapted for purposes in which joints would, in all probability, be a source of weakness, if not of expense, in consequence of the extra labour involved. Take, for example, some timber roofs of over 95 feet span, lately constructed for portions of the new building at Alexandra Park. If the tie-beams had been cut out of Oregon Pine logs, the central scarfed joint, with its fish-plates of iron and wood, might have been dispensed with; though, no doubt, it would have been necessary to reckon the expense of sawing the stuff down to the required scantlings, since logs of such a length would have run to a correspondingly large sectional area. Logs of Oregon Pine can generally be found floating in the basins of the Surrey and Commercial Timber Docks, but chiefly in what are termed Oregon masts, which are roughly hewn to an octagonal section, so as to allow of their being readily rounded off for masts and spars. It predominates in the forests of the West Cascade region, but not in the arid parts of the East Cascade region. It is plentiful in Washington Territory (United States). The Douglas Fir is also found in some of the Rocky Mountain valleys, on the Blue Mountains of Oregon, and here and there eastward as far as the head waters of the Platte. At present the principal seats of its manufacture for export are the coast of British Columbia, and in Puget Sound (United States). The Douglas Fir does not grow in any quantity north of Millbank Sound, in latitude 52°. The principal existing mills are in the New Westminster district, and probably that neighbourhood will continue to be the chief seat of the export of Douglas Fir. The Nasse-Skena district looks like a good saw-milling country on the map, but the Douglas Fir, as just said, is not found so far north. The inlets on the mainland, or some of the outlying islands between Millbank Sound and the new Westminster district, probably offer locations for export saw-mills, but it is not known, however, at present, that these places can be found readily. Many of the inlets are almost wall-sided, with short water-courses or torrents emptying into them, the water collected among the surrounding gloomy mountains. The rivers generally which flow into these inlets are not good "logging" rivers. There is, however, a vast extent of water-line between Millbank and new Westminster.

Natural Meteorologists.—It is said that a leech, placed in a bottle of water, remains at the bottom coiled up and motionless, if the weather is fine and the barometric pressure high. If rain may be expected during the day—which corresponds in general to a diminished pressure of the air—the leech rises to the surface of the water, and remains there until fine weather. If wind is approaching the leech darts about with great velocity. If a tempest is to be expected it remains out of the water, and experiences a kind of convulsions and violent agitations. In snow and prolonged rain the leech fixes itself at the orifice of the bottle. In permanent frost it remains at the bottom. On the contrary, a frog descends to the bottom before rain, and arises to announce fine weather.

NOTES OF THE WEEK.

— MR. DAVID THOMSON informs us that Pearson's Golden Queen promises to be a grand late yellow Grape. It is a seedling between Ferdinand de Lesseps and the Black Alicante. The bunch and berry are exactly like those of the Madresfield Court, but in colour bright yellow. The flavour is said to be excellent.

— AMONGST plants now in flower on the rock-work at Kew, may be mentioned the showy tuberous-rooted Begonias, which are blooming freely, while the pretty little *Nertera depressa* is one mass of rich orange-tinted berries, strewn over a carpet of the freshest green. *Crocus longiflorus* is also effective, and late-blooming *Cyclamens* promise soon to be very ornamental.

— THE large Vinery in the Royal Horticultural Society's garden at Chiswick is just now well worth a visit. It is the largest house devoted to Grape-growing in the country, and when the immense crop of handsome fruit, which it annually produces, is ripe, its appearance, especially to any one who sees it for the first time, is very striking.

— HAMBURGH GRAPES, from the original locality for the cultivation of this fruit, are now plentiful in Covent Garden. They come in steamers from Rotterdam, and are of very good quality. The way they are packed deserves notice. They come in circular baskets, without any packing material whatever, a sheet of white paper serving to keep out the dust. The lid of the basket fits firmly down on the Grapes; thus packed, they come much better than many Grapes sent from gardens in the home counties, wrapped in swaddling clothes of various kinds. These usually serve to remove the bloom and lower the market-value of the fruit.

— MR. YATES, of Sale, Cheshire, has sent us some remarkably fine plumes of *Celosia pyramidalis*, the colours of which are golden-yellow, crimson, and purple, of the brightest and most striking description; when well grown, as in the present case, these feathery Cockscombs form valuable decorative plants for the greenhouse or conservatory during the summer and autumn months, and deserve more general cultivation than they receive. Mr. Frisby, the gardener at Blankney Hall, Mr. Henry Chaplin's seat, in Lincolnshire, grows these admirably, so large, indeed, that his plants are in habit and grace more like good specimens of *Humea elegans*, than what we are accustomed to see as *Celosias*.

— WE have received, through Messrs. Veitch, some well-grown pitchers of different kinds of *Nepenthes*, grown by Mr. David Thomson, of Drumlanrig, among which, two splendid ones of *N. distillatoria* each held fully a pint of water, while others of *N. rubra*, *N. Hookeri*, *N. Rafflesiana*, and *N. ampullacea* were also fine examples of their respective kinds. A leaf of *Rafflesiana* (not including the leaf-stalk nor any appendage) measured 19 inches in length, and $4\frac{1}{2}$ inches in breadth, and the pitchers of *distillatoria* were produced, we understand, 22 feet from the pot in which the plant grew, and which was a 13-inch one.

— FROM a paper on "Some Indigenous Tuscan Remedies," read by Mr. H. Groves before the Pharmaceutical Conference, it would seem that plants furnish much of the medicinal products in use in that country. Many of the plants enumerated are well known as medicinal plants in other parts of Europe. The Chamomile (*Matricaria chamomilla*), for instance, is said to be found in the cupboard of every housewife, being used as a calming antispasmodic, and also applied hot externally for relieving pain. A custom very prevalent in Tuscany seems to be the administration of herb-juice in spring, which is prepared daily by many herbalists, and is also ordered by medical men. *Nasturtium officinale*, known as "Crescione," is used in conjunction with *Cochlearia officinalis* in the composition of herb-juice. This latter plant, though indigenous, is also cultivated to some extent. The flowers of the Wallflower (*Cheiranthus Cheiri*), under the name of Yellow Violets, are boiled in olive oil and used for enemata.

— ON Wednesday the Right Hon. the Lord Mayor, Sir Andrew Lusk, M.P., and the Lady Mayoress entertained the Master, Wardens, and Court of Assistants of the Fruiterers' Company, in accordance with an ancient custom, at dinner at the Mansion House. The dinner was served in the Egyptian Hall, and was principally given to the Fruiterers' Company in commemoration of the settlement long ago of an old grievance between them and the Corporation, arising out of the Lord Mayor for the time being from year to year in ancient times claiming a metage on fruit brought into the City market. This impost became so irksome to the traders that at length it was commuted into a voluntary offering by them to the Chief Magistrate annually of a choice selection of fruits of the season, he in turn inviting them to dinner at the Mansion House. We are not aware that the Fruiterers' Company ever do anything for fruit-growing, or fruit-growers, or even take the trouble to allude to either of these. We presume they have, in the course of time, become possessed of

much property, some of which is devoted to dinners costing £200 or £300 or so for themselves and their friends. However, this ignoble way is, after all, only what is followed by similar bodies.

— THE Royal Imperial Horticultural Society of Vienna has initiated a movement for the erection of a memorial in honour of the renowned horticulturist Siebold, in his native town of Würzburg.

— MESSRS. VEITCH have issued a coloured illustration representing their new Tea Rose, Duchess of Edinburgh, which is a good representation of this fine and distinct Rose.

— THE stately white flowered Feverfew (*Pyrethrum uliginosum*) is now finely in flower both at Chiswick and elsewhere. It forms, where well-established, a dense bush 4 or 5 feet high, and well deserves a place in the most select collection of herbaceous plants.

— A SEVENTH edition of "The London Catalogue of British Plants" has just been issued by Mr. Robert Hardwicke. This, the seventh edition, is made to correspond with the "English Botany" of Dr. J. T. Boswell-Syme.

— AN important sale of hardy plants is to take place at the Sunningdale Nursery, on the 19th inst., and, that in addition to many thousands of shrubs and other stock, various trees specially prepared and selected for avenues will be sold in large quantities.

— THE true Jalap plant (*Exogonium Purga*) is now blooming freely on a south wall at Kew, where its rich purple salver-shaped flowers have a beautiful appearance. Independent of what other properties it may possess it is well worth attention as a tender or half-hardy climber. Jalap has been in the European *Materia Medica* for the last two-and-a-half centuries, but, until comparatively recently, the plant that yielded it was unknown.

— JUST now, when most bedding plants are on the wane, or are already unsightly, it may be useful to direct attention to some splendid beds of Pansy Blue Bell, which are now in bloom at Chiswick. This variety is dwarf in habit, and forms a dense mass of rich purplish-blue, and, when combined with Golden Pyrethrum, some very striking autumnal effects might be produced. As a late bloomer this Pansy is one of the best we have yet seen.

— WE have received from Mr. Yates, of Sale, Cheshire, well-grown specimens of the Comte de Lamy Pear, a kind distributed by the Royal Horticultural Society many years ago; and an excellent Pear, although not so extensively grown as it ought to be. It is a medium-sized, roundish-obovate shaped kind, white when cut and richly flavoured. Mr. Yates has grown it for market purposes, in the form of standards, for years, and finds it excellent in his district.

— HERBACEOUS ASTERS, or Michaelmas Daisies, as they are popularly called, are just now amongst the most effective of all late autumn-blooming plants. Of these, there are collections at Chiswick and at Kew, both of which are well worth inspection by all interested in hardy border plants. One of the best is Chapman's Michaelmas Daisy (*Aster Chapmani*), now flowering in the herbaceous ground at Kew. It is a tall kind, bearing pale bluish flowers, and is well fitted, either for the backs of borders or for naturalisation.

— IN our report of the Royal Horticultural Society's meeting, which took place the other day at South Kensington, we inadvertently omitted to mention Carter's Green Gage Tomato, a new kind, which, on account of its singularly delicious flavour and distinct character, was awarded a first-class certificate. Since then we have received from Messrs. Carter specimens of this Tomato, which certainly possesses a peculiar and very agreeable flavour. In colour it is pale yellow, smooth, round, and about the size of a large Orleans Plum. To us it seems good enough to use as a dessert fruit.

— PLEIONE WALLICHII is just now blooming freely in the Orchid-house at Kew. The bulbs are grown in small pots, and these are judiciously suspended level with the eye, so as to be readily seen by the visitor. This is an example worthy of imitation in gardens both public and private. *Cattleya Pinellii* and *C. (Laelia) Perrinii* are also in flower, together with many other small flowered, but singular, species of botanical interest, including the curious green-flowered *Epidendrum diffusum*, and *Polystachia grandiflora*, bearing a large inverted flower at the base of the thick leathery leaf.

— A SAPIENT correspondent of the *Builder*, writing on the proposal to improve Trafalgar Square, remarks:—"There being some prospect of a change in the stony aspect of the most central of London squares, I venture to protest against the proposal of planting shrubs round the Nelson column. This would hide its proportions, and is every way objectionable. If the lions require some protection from rough usage, a moat filled with water would be more suitable, and might be supplied from the waste of the fountains." A moat would be a nice addition indeed to the attractions of Trafalgar Square in the nineteenth century. A good many clever persons are supposed to suffer from being born before their time, but this one we should not place among them. All interested in gardens, public or private, have much reason to exclaim, "Save us from the kind intentions of architects and builders!"

THE INDOOR GARDEN.

BEST GLOXINIAS.

THE following varieties have been in cultivation during the past two years, and have proved to be both useful and attractive:—Duchess of Athole, white and porcelain-blue; Mrs. Downie, white and crimson; The Shah, rosy-crimson, throat deep crimson; A. H. Bridges, cream throat, the mouth and lobes soft purple; Rev. H. H. Dombrain, crimson-lake, white throat; and Violet Marquise, rich violet with white throat, are all fine drooping varieties. Of the erect-flowering kinds the following can be very highly recommended:—Grand Monarch, dark rich purple, margined with white; Brilliant, dazzling scarlet, edged with carmine; Emperor of Brazil, deep violet and white; Purple Prince, white and deep violet; Sidonie, white, stiped with lavender; and Thomas Lobb, dark violet-blue, with pale blue margins to the lobes. The foregoing would make a select and extra fine collection both for exhibition and decorative purposes. Supposing a cultivator has a select number of fine varieties, and it is his desire to propagate any of them, the best plan is to attempt it by means of the leaves. If the leaves be taken from the plant at any season of the year, cutting them away with a piece of the stem adhering, inserted singly in small pots in some light sandy soil, and placed in a brisk bottom-heat, they will soon root and make rapid growth. Now, the Gloxinia has been so much improved upon, and seeds so freely, that a pinch of seed will be certain to furnish some very fine varieties; and there is the additional pleasure of watching for new beauties to unfold themselves. The seed of the Gloxinia is as easily raised as that of the Chinese Primula. If a pinch of seed be sown in March in a pan of fine soil, and covered with a sheet of glass or a bell-glass, and placed in a Cucumber-house or a propagating-pit, it soon germinates. As soon as the plants are large enough to handle, they should be pricked out into shallow boxes in a fine soil consisting of peat, silver sand, and thoroughly-decayed leaf mould, and grown on in a brisk bottom-heat. In June the plants will be fit to put into 48-sized pots, in which they will flower during August, September, and October. A packet of seed saved from a good strain will produce flowers both of the drooping and erect-flowering varieties. The best time to propagate from leaves is in the spring, as good flowering plants are thus obtained for the summer which follows. The Gloxinia is impatient of water at all times, although it luxuriates in a humid atmosphere. If too much is given at the roots, the plants soon decay; therefore, it should be administered always with caution, and never till they are dry. Syringing overhead, though recommended by some growers, should be withheld while the plants are in flower; only let there be a humid atmosphere. This is essential to the well-being of the plants; in a dry atmosphere the leaves are apt to become infested with red spider, and get a very sickly appearance. A soil composed of fibrous peat, leaf mould, well-decomposed sheep manure, with a very liberal addition of silver sand, is that best suited for Gloxinias. They should not be potted into large pots unless the plants are very strong; 48 and 32 pots will be found quite large enough for general purposes. When the plants die down at the end of the summer, after flowering, they may be stored away in a dry place under the stage of a stove, or on a dry shelf, till they are wanted for re-potting. If a succession of bloom is required, some of the tuberous roots should be potted in January, and successional batches in February and March; these will yield a good supply of beautiful flowers throughout the summer, and, while they last, will be always gay and effective.

R. D.

PHILODENDRON SELLOWIANUM.

THIS, though an extremely effective plant, is rarely seen in sub-tropical collections in this country; it is, however, frequently met with in Continental gardens, both as an open air decorative plant during summer, and as one for the ornamentation of conservatories and apartments during winter. It grows quickly in a moderately warm temperature, throwing up dense green leathery foliage on all sides, and forming a very symmetrical plant, such as that shown in the accompanying illustration. Like its congeners, it luxuriates in a rich warm soil; and, while growing, requires plentiful supplies of moisture at the root during hot weather. Unfortunately, it is rather difficult to propagate, a circumstance which may in some measure account for its scarcity; still offsets are occasionally produced by well-established plants, and, if liberally treated, these grow rapidly and soon form well furnished specimens, while plants of this Philodendron used for sub-tropical gardening in summer, are effective for conservatory decoration in winter, their deep green singular looking foliage having a pleasing appearance intermixed with that of other plants.

B.

DRAINAGE AND WATERING OF POT PLANTS.

WE are so accustomed to the practice of growing plants in pots, that many people, I dare say, have come to regard the flower-pot as almost essential to the culture and well-being of hot-house plants—to think, in fact, that a plant in a pot is more favourably circumstanced than it could be in any other way. This, however, is a mistake. The flower-pot is certainly indispensable in some cases, but, after all, it is but an imperfect contrivance, and it will, perhaps, surprise some to be told that a plant could scarcely be placed under conditions more inimical to its welfare than when it is growing with its roots in a flower-pot. Its existence, under such circumstances, is altogether a question of unremitting attention and skill, and not unfrequently these are unequal to the task of maintaining robust health, which might be secured without difficulty if the pot were discarded and the plant placed under



Philodendron Sellowianum.

natural conditions. I might instance such plants as the Camellia, the Orange, or the Luculia, all of which attain a degree of vigour and luxuriance, when planted out, unknown to specimens grown in pots. Some would, perhaps, ascribe the difference to freedom of root-action in the former case, and restriction in the latter; but this is not the whole explanation of the matter, for a plant makes most roots in a pot, and it can be fed liberally with liquid manure and other stimulants. Besides, that restricted root action has little influence either one way or the other is proved by the fact that when the pots are plunged in some medium, such as earth or ashes, the plants grow nearly as vigorously as when planted out altogether. It is the extremes of temperature and the irregular condition of the soil as regards moisture, to which the roots are subjected in a pot, that operates injuriously upon the plants. The common earthenware pot absorbs much of the water that is supplied to the roots, and, being an active conductor, evaporation is continually going on from its outer surface, robbing the roots packed against the inside of both heat and moisture to an extent just in proportion to the position the pot occupies. In a conservatory, for instance, where the ventilation is abundant, this cooling and, under some circumstances, almost freezing process is constantly in operation, and is only counteracted by unremitting attention to shading and watering. The direct evils arising from this unavoidable state of things are the attacks of insects—aphis, red spider, and thrips—mildew in some subjects, and

in plants such as *Heaths*, *Cinerarias*, and *Calceolarias* very often death. Indeed, all, or nearly all, the evils to which pot-grown plants are subject are traceable to the pot system, or to the practices it entails, among which drainage and frequent watering must be reckoned the most important. Let us consider the drainage question first.

The greater proportion of plants, whether grown for fruit or flowers, which are cultivated in pots require liberal supplies of water in order to keep them in health, and the only object of draining the pots with crocks, cinders, or other materials in the usual way is to carry off surplus water and prevent it stagnating about the roots. But some carry this system of drainage to an extravagant length. Whether the pots are great or small, they insist upon filling them a quarter or one-third full of crocks, as if there were a possibility of water stagnating in any but a compost of the most tenacious description, and forgetting entirely that the evaporation from the sides of the pot is almost sufficient in itself to prevent even a large ball of soil from ever becoming unduly saturated, except through careless watering. No pot requires more drainage than is just needful to allow the surplus water that is given in watering to run off readily; and a very few crocks will permit this if they are clean. Great pains are not unfrequently taken in draining pots for Pines, pot Vines, and such like, resulting in nothing that I ever could see but waste of time. All that is necessary in pots of the largest size is to put a good piece of crock over the hole in the bottom, concave side downwards, and on the top of this, half-an-inch, 1 inch, or 2 inches—according to the size of the pot—of crocks that have been put through a half-inch sieve and cleaned. This is all that is required, and the operation can be performed in about one-fifth of the time usually taken to build the superstructure of pieces, great and small, that many consider essential. I drain everything in this way from the tub, downwards, and for the most select subjects, and never knew the drainage to get choked in a single instance. As for small pots up to 4½ inches, I rarely use more than one crock, and for the thousands of bedding plants we get up every year no crocks are used at all. Why should we crock a 4-inch pot with a hole in the bottom of it, and which does not contain more than a handful of soil, and presents nearly a superficial foot of evaporating surface all round? The difficulty I find is to keep such plants moist enough before bedding time; yet I know that in places where bedding stock is raised by thousands, every pot is crocked in the most patient manner, and when the plants are turned into the beds the crocks in each have to be again carefully removed—all of which is lost labour and nothing more. And now as to watering. If we want a lesson, we cannot do better than take notice under what conditions as to moisture plants thrive best out of doors. In a healthy soil, unless it is just after heavy rains, we never find the soil so saturated as to feel cloggy in the hand, as the soil about pot-plants often is through over watering, causing the surface of the ball and sides of the pot to become green and soured—a state of things in which no plant, not being a marsh plant, can long exist in a healthy state. To ensure watering being efficiently done at all times, no pot should be filled up to within less than half-an-inch or two inches of the rims, according to the size of the pot. This point is often overlooked by operators who do not take time to think of the after inconveniences which result from such neglect. When great numbers of pot Strawberries, pot Vines, and such like come to be watered frequently during the growing and fruiting periods, the evils of over-potting become apparent, and to save labour with the watering pot, saucers beneath the pots become a necessity; whereas, if sufficient space had been left for watering, they would not have been required, for saucers are an evil, owing to the danger of water standing about the roots.

I force many hundreds of Strawberry plants every year, but by careful potting, and by arranging the plants on the shelves so that they may have as much shade as possible, I never require to use a single saucer to hold water. The best time to water plants is early in the morning, before the drought and heat of the day are felt, or late in the afternoon, when ventilators are closed and evaporation is reduced to a minimum. The water should always be, as nearly as possible, of the same temperature as the air of the house in which the plants grow; and this may always be ensured conveniently by having a tank in the house big enough to hold sufficient water for at least twenty-four hours supply, so that it can be filled once in that time, and the water left to get warm before it is used. It will be found highly advantageous to the plants upon shelves and airy stages to arrange them so that the foliage of one specimen will shade the pot of another. It is the sun and air playing upon the roots of plants so situated which does the mischief; hence the practice of plunging the pots wherever practicable, but which cannot always be done; and shading is the next best plan. The great advantage of shading the pots, when plants are growing, I have signally proved over and over again, in the case of Strawberries especially. Instead of placing

them widely apart in rows after potting, I set them closely together in broad squares, and in this way they shade each other effectually, and the sides of the pots are always cool and moist; they do not need to be so often watered, and the plants grow vigorously, the outside plants invariably being the weakest and most stunted, and requiring to be watered nearly twice as often as those inside the square. In September, in order to harden the roots and ripen the crowns, I thin the plants out a little, say from 6 to 8 inches apart, always retaining the "square" arrangement till they are housed in October. By this treatment I get Black Prince Strawberry plants with leaves like Keen's Seedling, and crowns as long and as thick as my thumb, with a potful of healthy roots. This treatment, which suits the pot Strawberry so well, would be found equally beneficial with all pot plants. Watering regularly and abundantly should be the rule; but no plant should be watered till it is needful, while at the same time watering must never be delayed till the soil becomes parched, and the extremes from heat to cold and from draught to saturation will be avoided.—*Field.*

WINTER CULTURE OF MIGNONETTE.

Few flowers are more esteemed for bouquets in winter and early spring than Mignonette; it is also very useful for the decoration of the drawing-room and conservatory at those seasons of the year. Although Mignonette is not a delicate plant, yet it is not generally seen in the perfection to which it might be brought by good culture. To flower at or soon after Christmas the seed should be sown earlier than this, say about the beginning of August, in pots of any convenient size. The soil should be good loam, moderately enriched with rotten dung, and kept open by a pretty liberal intermixture with old mortar or lime rubbish. It is essential that the pots be thoroughly drained, and upon the drainage a handful (more or less, according to the size of the pots) of one-year-old pigeon's dung should be placed. After sowing the seed, set the pots where they will not require frequent waterings, too much moisture being extremely injurious to Mignonette; for this reason, therefore, it will be safer to place the pots in a frame or pit, where they may be covered by the lights in rainy weather. As the plants increase in size they should be gradually thinned, ultimately leaving three or five in each pot. The principal point to be attended to now is judicious watering; by this I mean giving water only when the plants really require water, and then in sufficient quantity to moisten the whole of the soil—not dribbling a few drops over the plants to-day to prevent them from being dry to-morrow—a practice too much followed with plants in pots. Pinch off any premature flowers that may appear, keep the pots free from weeds, and far enough asunder to prevent the plants from being crowded, and when they are removed to winter quarters, set them near the glass in an airy situation. A few of the plants might be placed in an intermediate house, or other situation rather warmer than a greenhouse, to come into bloom a little earlier than the rest. I have recommended the seeds to be sown in the pots, which is the method I prefer; but, if more convenient, a sufficient number of self-sown plants might be taken up and potted, only a few extras should be put in to allow for casualties, as Mignonette transplants badly. The best Mignonette I ever saw was treated in this way; but as it is not every one who can procure pigeon's dung, I may add, that guano will be found an excellent substitute. This must, however, be applied in a liquid state, and not before the pots have become well filled with roots, when a small quantity of guano, given at intervals of a week or so, will increase the vigour of the plants in an extraordinary degree. A second crop might be sown in the beginning of September, and managed in the same manner. Single plants will attain a large size in 32 or 24-sized pots, if the main branches are pegged down as they grow and the flowers are kept pinched off for a time. The beginning of January is early enough to make the first sowing for a spring supply. The pots for this sowing should be from 4 to 6 inches wide, and should be filled with soil to within half an inch of the rim, then press it evenly and firmly, and on this sow the seed regularly; and, if its quality can be depended on, eighteen seeds will be enough for each pot—they will come up with more strength than if sown thicker. Sift a little soil over them and give a gentle pressure with the hand, leaving the surface smooth and even; then water with tepid water, which will warm the soil and assist germination; plunge the pots in a frame with a gentle bottom-heat, and give but little air until they begin to appear: afterwards give ventilation more freely, avoiding at all times the admission of cold air in great currents, as Mignonette suffers very much from rash exposure in that way. When the plants become a little hardened take off the lights every fine day from eleven to one o'clock, which will prevent them from being drawn, and better enable them to support themselves. As soon as the seed-leaves are fully developed, thin out the

plants, leaving at this time twelve or thirteen in each pot. This number should be kept for a while, as they are liable to damp off, if the weather should happen to be wet and dull. When they have made four or five leaves, thin them out to seven plants, which will be quite sufficient. At the same time, stir the surface of the soil, which generally becomes hard by continual watering, and thereby prevents the access of air to the roots. When the sun begins to act powerfully upon them, a thin shading for two or three hours during the heat of the day will be of service. When they have attained the height of 3 or 4 inches, they should be tied up, to prevent them from falling over the sides of the pot; in doing this, put six small stakes, at equal distances, close by the edge of the pot; then pass a strip of matting with a turn round each of the stakes, and fasten it; the stakes should be left 3 inches at least higher than the plants, as they will require a second tie. If the roots have now found their way through the bottom of the pot, they must be broken off, or the plants will receive a great check when finally removed. In replunging, give them sufficient room to prevent their being drawn; they will require great attention till the beginning of May, when they will, if properly managed, be in good condition for removing to the greenhouse. The next sowing should be made in the latter end of March. Successional sowings may be made about the latter end of May.

W.

SIPHOCAMPYLUS BETULÆFOLIUS.

This is a well-known South American plant, specifically distinguished by its Birch-like leaves. It forms a dense-branched shrub, which, under good management, is covered, from early spring till late in



Siphocampylus betulæfolius.

autumn, with bright scarlet-tinted yellow-lipped blossoms. Our illustration represents the end of a branch furnished with flowers, which, springing from the axils of the leaves, contrast very strikingly with the foliage. Young plants of it obtained now will make good sized specimens next year. During winter they should occupy a situation somewhat near the glass, in a house where the temperature may range from 45° to 55°. Care must be taken not to overwater the soil at this season; but an occasional sprinkle with the syringe on the mornings of bright days will be beneficial, especially if the plants exhibit any signs of the approach of their enemy, the spider. As early in spring as is convenient place them in a moist growing temperature of from 60° to 75°. Examine the state of the roots and shift into the flowering-pots, if the balls are full of active healthy fibres; but if otherwise, repair the drainage, clearing away any unkind soil, and defer shifting until space is wanted for the roots. After shifting, the plants should be neatly staked, keeping the branches rather thin, and any over gross shoot should have its point pinched off, with a view to equalise the growth, and secure well-formed compact specimens, which this will tend to effect. The spring treatment may be moist and warm, if growth is desired, but if the object is to have the plants

in full flower early in the season, they should be placed where they will receive all the light which can be afforded them, with a free circulation of air on every favourable occasion, and a rather dry warm temperature may be maintained, but in this case it will be necessary to use the syringe freely, for if spider obtain a footing at this season it will be a lasting pest, and also disfigure the handsome foliage. During the summer months flowering specimens may occupy a situation in the warm end of the greenhouse, or elsewhere, where they can be screened from the mid-day sun, and where they will not be exposed to drying currents of air. If it is wished that the plants should continue producing flowers during the autumn, they must be removed to a situation where the night temperature may range as high as 50°; and, if this is maintained, they will flower throughout the autumn and winter. But if not wanted for autumn blooming, they should be removed to a situation where the temperature may range about 45° at night, and they should not be over-watered. With a small shift annually, they will last several seasons; and if they appear bare and unsightly, they may be cut back, and after they start into growth the balls may be greatly reduced, which will render them as good as young plants. Firm pieces of the young wood planted in sandy peaty soil, covered with a bell-glass, and plunged in a gentle bottom heat, root freely; or strong plants are speedily obtained by layering a shoot on the surface of the pot. Good turfy peat and loam in about equal proportions, with a liberal admixture of sharp silver sand and lumpy bits of charcoal or potsherds, will form a suitable compost for the growth of this plant. Another species of this genus, *S. penduliflorus*, has very long climbing branches, and pendent panicles of carmine-red flowers. J. S.

Solanum lycioides.—What is this? I have a good collection of *Solanums*, and one bearing this name. Can you furnish any account of it?—DOWNIE. [It was found by Hartweg, in the valley of San Antonio, in Peru, and flowered at Chiswick some years ago. It has a neat habit; the leaves are lanceolate; the flowers are of the richest sapphire purple, enlivened by a bright yellow eye, and, in the wild state, appear in clusters so numerous as to load the little spiny branches. The name is a happy one, for in its natural state it is very much like a dwarf *Lycium barbarum*. In cultivation, however, it loses some of its stiff spiny habit. It is by no means new to Europe, for it was represented in Jacquin's "Figures of Rare Plants" more than sixty years ago, but it has disappeared from most of our gardens. It is a greenhouse plant, which appears to succeed in almost any kind of soil, but to prefer sandy loam mixed with a little rough peat. To flower it well, it seems necessary to place it out-of-doors during summer, in some exposed situation, where it can remain till the end of September. By that time the flower-buds will be formed, and they expand in a short time after the plant is taken indoors.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Fuchsia procumbens.—Of this new *Fuchsia* we have recently seen a nice stock in Mr. Kinghorn's Nursery at Richmond. It is a gracefully drooping species well worth culture, even if none of its little yellow, purple-tipped, blue-anthered flowers were produced. It is readily propagated, and as a basket plant deserves a place in every greenhouse. It has been exhibited at South Kensington, and was much admired.

Wintering Caladiums.—I should be obliged if you would tell me the proper way of treating *Caladiums* at this time of year. I have never yet succeeded in preserving the tubers.—GERAT MALVERN. [After the plants have died down naturally, lay the pots containing them on their sides on a shelf or under a stage, in an intermediate house, but not near hot-water pipes, which would dry them too much. Laying the pots sideways keeps the root from suffering from drip. Thus treated, we have never known them to fail. Some growers, however, turn them out of the pots in which they have been growing and store them in a box of sand.]

Stove Plants for Winter Blooming.—E. S. The best are *Euphorbia jacquiniæiflora*, *Eucharis amazonica*, *Gesnera exoniensis*, *Gardenia florida*, *G. citriodora*, *Luculia gratissima*, *Poinsettia pulcherrima*, *Plumbago rosea*, *Eranthemum pulchellum*, various *Epiphyllums*, *Ureolina aurea*, *Franciscæ*, *Conferiflora* and *calycina*, *Stephanotis floribunda*, *Aphelandra cristata*, *Imantophyllum miniatum*, *Clerodendron Balfourianum*, *Impatiens Jerdoniae*, different kinds of *Amaryllis*, *Centradenia*, *Centropogon lucyanum*, *Conoclinium ianthinum* and *atrorubens*, *Ixora amabilis*, *aurantiaca*, and *javanica*; various *Rogeria*, *Rondeletia speciosa major*, *Scutellaria Mociniana* and some others, *Sericographis Ghiesbreghtiana*, *Siphocampylus nitidus*, *Thyracanthus rutilans*, and two or three sorts of *Toxicophleas*.—J. BENTLEY, *Pine-Apple Place*.

Lobelia Lady Macdonald.—This new *Lobelia* at present occupies a conspicuous position in Messrs. Downie, Laird, & Laing's winter garden, in Edinburgh. Its flowers somewhat resemble those of *L. Paxtonii*, but individually they are much larger than those of that variety; the three lower petals of each bloom measured collectively about an inch across. It is, however, if anything, lighter in colour than *Paxtonii*, and is delicately suffused with blue. It is an abundant bloomer, and, as a *Lobelia* for pot-culture, surpasses anything in that way I have seen. Apart from the usefulness of *Lobelias* in the flower garden, they make, as is well-known, valuable vase-plants, and they are equally useful for intermixing with foliage and flowering plants in front rows on the shelves of greenhouses and conservatories; for such purposes *Lady Macdonald* will be found invaluable. It obtained a first-class certificate at the Royal Caledonian Horticultural Society's show on the 9th of September, and its merits do full credit to the award.—J. MUIR, *Gloedenfords*.

THE FRUIT GARDEN.

VINES IN GREENHOUSES.

THE Vine has been more or less successfully cultivated in Pine-stoves, but its culture in the greenhouse has not been attended with equal success. This may proceed from various causes, such as the condition of the Vine-border, improper temperature and aëration. If the border be imperfectly drained, or the soil exhausted, the first thing to do is to remove the earth of the border to the depth of 3 feet, if on a sloping surface, but if flat 2 feet will be quite sufficient. It should not be less than 15 feet wide. It is impossible to lay down an invariable rule as to the depth of soil which ought to be removed in every case, but I wish it to be distinctly understood that it is not necessary to dig a deep pit, as some do, for the purpose of filling it up with a mass of materials through which the sun's heat will never penetrate; for, although such a border may be made of the best composition, it cannot be called a good border. When the old soil is cleaned out, a good drain should be made along the front of the border. In forming a new border, the bottom part should have a good slope, and should be covered about 10 inches deep with rough stones. Over the stones place a covering of Furze, with the bushy side uppermost and the woody part under. A row of turf should be placed upon the Furze, with the grassy side downward. This will form an effectual and a permanent drainage to every part of the border. The new border should be composed of fibrous turf, leaf soil, and horsedung, which should be filled in to the depth of 4 feet, as it will finally subside to about 3 feet. It is unnecessary to prescribe the proportions to be used of the above ingredients, as that must depend on circumstances. Leaf soil is generally a scarce substance; and, therefore, should the loam be of a strong quality, it should be mixed with light soil, as much of a vegetable nature as possible, keeping in view the principle that the composition should be sufficiently porous. If the old Vines have been growing in a wet soil, or a great portion of their roots decayed or rotten, I would recommend in planting them to lay a portion of the stem across the border and peg it down with strong pegs about 6 inches deep. As to what length ought to be laid down in this manner that will depend on the state of the old Vine. The lower part of neglected Vines is generally bare of young wood, perhaps half-way up the main stem. Some of the spurs beyond that may even be exhausted. I would therefore plant so as to have a good fresh shoot at the entrance of the Vine into the house, or, at least, at the foot of the rafter. This shoot should be cut down to two or three eyes, and, if all go on well, it will grow from 20 to 30 feet the first season. If young Vines are required (and, upon the whole, they are best, if the old ones are not in good condition), good strong ones should be procured from a respectable nursery and planted in spring. The roots should be well spread out, and 3 feet of the stem should be laid down horizontally 6 inches deep in the ground. The sorts most suitable for a greenhouse are—Black Hamburg, Black Prince (Hamburg), and White Sweetwater. I would advise that the border should be covered with a light covering of dry leaves, or leaves and dung, about this time of year, and a covering of water-proof canvas or wooden shutters should also be applied to carry off heavy rains. The covering should be removed about the middle of May, when the border should be forked over, and it should be frequently stirred during summer, but especially after heavy rains.

J. H.

A Large Peach Orchard.—Mr. Shellcross, who resides near Middletown, Delaware, owns one of the largest Peach orchards in the world. Last year he shipped to New York 125,000 baskets of fruit, and it is estimated that he lost, by being unable to procure labour to pick, about 25,000 baskets more. On several days he loaded from his orchard ten railway waggon loads. Mr. Shellcross's orchard reaches along the public road for more than 8 miles—generally on either side—and covers an extent of upwards of 1,000 acres, on which is growing more than 100,000 trees.

Victoria Nectarine.—This Nectarine is one of the best varieties in cultivation. It is a strong grower, an extraordinary bearer, and the fruit is large and of first-rate flavour. I am not acquainted with any other variety that stands heavy cropping year after year like it, and, at the same time, swells its fruit so well. We have one small tree here that was planted in 1866—a young plant, and which has borne every year since—generally a fine crop for the size of the tree. This season it had above twelve dozen fruit upon it, all large, and made a strong growth at the same time. I should mention that the fruit never acquires its full colour and flavour while on the tree. The shady side is always green when the fruit is fit to gather, but it gets well flavoured and a high colour after it has lain in the fruit room a few days. The Victoria is a second early kind, and should be

leisurely ripened, with plenty of air, and the fruit should be well exposed to the sun, when it acquires a deep red colour on the sunny side. I have kept the fruit a fortnight or more after gathering in the fruit-room, and six weeks in a box in the ice-house.—J. S. W.

Thinning Fruit Blossoms.—Some of the older writers on fruit culture suggested that in the case of fruit trees that did not set their fruit well, it was of service to thin out the blossoms or to pick off the early petals of the flowers to ensure the remainder setting well. Mr. Du Breuil, has been experimenting in this matter. In 1872 he operated upon twenty espalier Pear trees of the Doyenne d'Hiver Pear, taking out the central blossom from each bunch of flowers on every alternate tree in the row. When the fruit was gathered he found that there was no perceptible difference either in the quantity, the quality, or size of the fruit. In 1873 he repeated the experiment upon twelve trees, operating upon an alternate six. In this case the trees operated upon produced sixty-five fruits, and the six not operated upon produced sixty-eight fruits. He therefore concludes that, whilst the theory appears rational enough, practice does not sanction its correctness; and that the operation has no influence upon the abundance of the product.

Pasturing Cows in Apple Orchards.—In riding through Normandy last autumn—a country filled with orchards—from the Apples of which cider, the universal beverage of the district, is made, the writer saw a great number of cows pasturing on the rich Grass under the trees, and eating the fallen Apples. Every cow was rigged with a sort of rope harness, to the girth of which was attached a short halter that prevented her raising her head to take Apples from the trees. The contrivance was exceedingly simple and cheap, and there is no reason why it might not be adopted by cultivators in this country, who would gladly pasture their orchards except for the damage done to fruit and branches by cows whose heads are free. The halter should be as short as will allow the head to be raised to its natural level; there will then be no danger of its being caught by the foot. This is not only more effective, but much less objectionable than the method sometimes practiced of tying the halter to one of the forelegs. The cow, when harnessed in this manner, walks about, lies down, and rises up, with perfect freedom.—*Agriculturist*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

What to Grow Under Vines: W. W. H. You cannot get plants to grow well under the shade of Vines. There are plants that at certain seasons require the same treatment. When, however, forcing the Vines, all sorts of flowering plants could be forced too, but as soon as the Vines are in full leaf they should be taken out. In winter, Vineries not having fruit in them can be used as ordinary greenhouses.

Frogmore late Bigarreau Cherry.—This, of which a coloured plate is given in this month's *Florist*, is said to be a very useful late variety, which hangs long on the tree without cracking, a fault belonging to the old Bigarreau. The fruit of this late kind is large, bluntly heart-shaped, with a slight suture. The skin is pale waxy-yellow, covered with bright red on the sunny side; the flesh is tender and juicy, and in every way excellent.

Early Normandy Plum.—A Plum bearing this name has been originated in France. The early season at which it ripens may render it worth cultivating in this country. It is thus described:—Tree, a very vigorous grower, with long branches somewhat divergent. Fruit, as large as that of a Greengage, divided on one side by a very slight suture. Skin, fine, transparent, separating readily from the fruit when ripe, of a clear purple colour on the sunny side, and light flesh-coloured on the shady side; covered with a light bluish bloom. Flesh, fine and melting, of a greenish colour, somewhat firm, filled with a very abundant sugary refreshing juice. It ripens from the middle to the end of July, and this, together with its size, handsome appearance, and good quality, render it valuable. We have no large Plum of the same character which ripens so early.

Pear Culture in Japan.—"Occasionally," says Mr. T. Hogg, who knows Japan well, "as you pass along, you see orchards of trained Pear trees, of the kind peculiar to the country. The trees are planted, as nearly as I could judge, from 12 to 15 feet apart. After attaining the proper height, the tree is allowed to form branches, and these are trained to rough framework of the same height, perfectly level, and extending over the whole area of the orchard. What object the cultivator has in training them in so careful manner I have not as yet ascertained; but why may it not have its advantages in enabling him to secure his crops in the highest possible condition? Every fruit is thus brought into view, and within reach of the gatherer, who, where trees are left to grow in their natural form, too often runs the risk, in order to secure some tempting prize displaying its beauties on some inaccessible branch, of injuring the tree, or worse, possibly himself.

The Hoolbreuk System of Fruit Culture.—A year or two ago a new system of fruit culture, practised by a peasant on the Danube, was introduced to the public by "Les Mondes." The system consists essentially in training the branches of fruit trees, Vines, &c., so as to give them an inclination below the horizontal line, in which case there is, it is said, a great increase in the fertility of the branch. An essential condition of the process consists in having the line of the branch nearly straight, as, if curved, only the buds at the top of the arch are developed, while the rest remain in their original condition. In an instance related by a Mr. Thoreau, he took four Vine plants and trimmed them, so as to have one stem to each, and trained them each a different way—vertically, obliquely upwards, horizontally, and obliquely downwards. He found that from the limb inclined downward more than three times as much fruit was produced as from the others. Doubtless this, or a modification of it, has been often tried with us. It is, perhaps, however, worth a systematic trial.

THE FLOWER GARDEN.

TREE WEIGELAS.

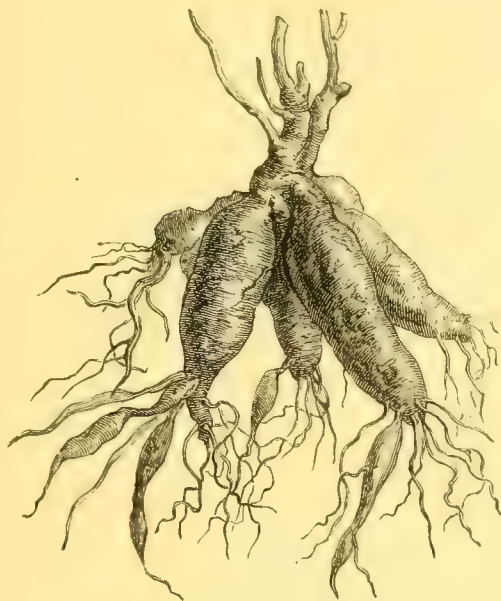
THESE can be made in the following manner:—Strike cuttings of the young wood at the middle or end of summer. They will root very easily in a frame or under a bell-glass on the shady side of a hedge or fence. In the spring, plant them in rich, deep soil, and a warm, sunny situation. Before winter, they will form a vigorous little bush. In the following spring, manure the ground, unless it is extremely rich; and cut down the bush to within an inch of the surface. It will at once begin to throw up a number of strong succulent shoots from the crown of the root. When these are 2 or 3 inches long, slip off the smallest and weakest of them; then choose out the strongest and most upright shoot, and pinch off the tops of all the rest. If they were all removed at once, the supply of leaves would be insufficient to meet the demands of the root, and the vigour of the plant would be diminished; but as the chosen shoot grows, and develops its leaves, the rest should be pinched back, and finally removed entirely, though not all at once. The chosen shoot is now left alone, drawing all the nourishment of the root, and nourishing it in turn by the broad, healthy, deep green leaves with which it is furnished from top to bottom. It will throw out side shoots, but these should be slipped

head from 12 to 18 inches in diameter, which will bloom abundantly in the next summer. Thus you obtain a tree some 4 feet high instead of 6 or 7 feet. A row of such trees planted at intervals along a garden-walk would be a very attractive object, and they would not interfere much with the flowers below. The old *Weigela rosea* is not suited to this use. We have found the best varieties for trees to be *W. grandiflora* and *W. Desboisii*. *W. Isoline* also answers pretty well, though it does not make so straight and clean a stem. Probably the large, strong-growing *W. arborea* would do extremely well; though we cannot answer from experience. All these are robust in growth, with a tendency to form straight upright stems. Other species and varieties, such as *W. multiflora*, *W. hortensis nivea floribunda*, and the variegated-leaved varieties of *W. rosea*, might be grafted on them as stocks.

F. PARKMAN.

AMPELOPSIS TUBEROSA AND NAPIFORMIS.

A. TUBEROSA, though not quite hardy, is a plant well deserving of attention; it has slender branches and smooth, glossy, much divided leaves. Its roots, which are tuberous, are generally united together at the shoulders, into an irregular mass, deep red or brownish in colour; in texture they are cellular, and contain a good deal of

Tubers of *Ampelopsis tuberosa*.Tubers and leaf of *Ampelopsis napiformis*.

off as fast as they appear, as well as all shoots from its base. It will thus grow from the top alone, and, by the end of the season, will form a straight stem 6 feet or more high. This is the trunk of your tree, the top of which is formed during the next season in the following manner:—Rub off all the buds that begin to grow along the stem to within a foot or more of the top. Here many buds will rapidly develop, and push out on all sides into succulent shoots. When these are about 6 inches long, pinch off the tips with the thumb and finger. This will cause them to branch; and the branches, being treated in the same manner will branch again. Thus, before the season is over, you will obtain a compact head round, or of any shape you please to make it; for, by this system of pruning with the finger and thumb, you can completely control the growth. Your tree is now complete, and, the next summer, will astonish you by its mass of bloom. It will continue, however, to develop for several years; being kept in shape by finger-pruning, and all side-shoots from the stem being rubbed off. Such a tree requires three years from the planting of the cutting for its formation; but a smaller tree may be made by the end of the second year. To do this, pinch off the top of the young stem when it is from 3 to 4 feet high and in full growth. This should be about the end of July. It will soon begin to throw out branches at the top, which should be pinched back as before directed. In October it will have formed a

mucilage something like that found in the roots of the Chinese Yam. *A. napiformis* is a hardier plant than *A. tuberosa*, but closely resembles it in appearance, and, like it, is deciduous. Its roots, which are Turnip-shaped, are arranged in clusters, fleshy and brittle, and covered with a wrinkled brownish skin. They are also abundantly stored with mucilage, similar to that of *A. tuberosa*. Both these species of *Ampelopsis*, which are natives of China, may be increased by means of cuttings put in in spring, and struck under a bell-glass. A peaty soil suits them best when young; but when established, they may be planted out-of-doors in summer, when they will succeed in good garden mould. Both kinds possess considerable interest as outdoor climbers in warm situations.—*Revue Horticole*.

Wintering *Salvia patens*.—In reference to your remarks on this subject (see p. 340), I may add that I have wintered this *Salvia* as follows:—After the stems were cut down in October, the plants were lifted and the soil shaken from them. The roots were then planted thickly in a bed of fine soil in a cold house (a cold frame would answer equally well), and, with the exception of a good soaking of water occasionally, just to keep the soil moist, they received no further attention during the winter. Early in March, the young growths begin to push through the soil, and by the end of the month hundreds

of strong cuttings may be had if required. Early in May I take the plants carefully from the bed, divide them with a sharp knife, and plant them. Some time ago Mr. Falconer called here, and he then stated that *Salvia patens* was so far hardy in the north of Scotland that the roots were allowed to remain in the ground all winter. Last winter, therefore, I allowed two long rows, each containing about 100 plants of it, to remain where they had been growing all summer. As soon as the stems had been cut off a ridge of earth, about 6 inches in thickness, was thrown up over the roots, and this was allowed to remain until the end of last March; then, on a dry day, the soil was carefully levelled with a fork, and by the end of April young growths had come through the ground in great abundance; and, although we had some severe late frosts, no material injury was sustained. This summer the plants grew robustly and bloomed profusely, suffering less from drought than usual, a circumstance doubtless owing to the fact that they were well established. I am, therefore, of opinion that the roots of *Salvia patens* are quite as hardy as those of the *Dielytra spectabilis*, and that if the crowns be protected with a small heap of ashes, they will not be injured by frost. My plants this season must be lifted as soon as cut down by frost, as the ground they occupy is required for a different purpose. I shall merely, however, transplant them thickly into some light soil under the boughs of an overhanging tree; and, in the event of sharp weather, protect them by means of a little dry litter.—A. DEAN, *Bedford*.

The New Pelargonium Society.—This deserves the cordial support of all interested in the cultivation of Pelargoniums; for owing to the vast numbers of them that are yearly "let out," purchasers want some trustworthy tribunal on whose decisions they may depend. There is now so little difference between some of the stage varieties and the Zonal class, that the latter name has but little significance. Zonals, indeed, might not inaptly be termed "perpetual flowerers," possessing, as they do, such a floriferous habit. But apart from this, would it not be well to elect the opinions of growers in various districts, as to the varieties of which they most approve as "bedders." In this estimate they should take into account habit, brilliancy of colour, continuity of bloom, and profusion of flowers. The exposure to which they have been subjected might be named, and whether grown upon strong or light soil. This would be necessary, as soil, situation, and other local circumstances effect such a change in certain kinds. I believe that such an election, properly carried out, would not only prove highly interesting, but instructive. The electors should be requested to name such a number in each section, as may ultimately be determined upon, as, for instance:—Six Scarlet Zonals, four Golden Tricolors, four Silver Tricolors, two plain Golden-leaved kinds, two Bronze Zonal, two Rose-flowered sorts, and two White. On this proposal, I shall be glad to have the opinion of some of your correspondents.—GEO. WESTLAND, *Witley Court, Stourport, Worcestershire*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

New Variegated Snapdragon.—I have sent you leaves and a flower of a variegated Snapdragon which came upon one of a batch of seedlings in a nursery in Shropshire. The bloom is crimson, with yellow mouth, and the leaves have a deep cream-coloured edge, and are sometimes slightly variegated. The habit of the plant is dwarf and the variegation constant; it grows well, and is very hardy. It is eminently adapted for borders in winter, the green in the centre of the leaf contrasting well with the light edge.—H. S. NEWELL, *Bishops Cleeve*.

Goldilocks (*Chrysocoma Linosyris*).—This is just now in perfection on the Orme's Head, Llanrhudda, North Wales, and I believe Llanrhudda to be its most northern habitat in our island. Perched high up among the grassy rocks and ledges of the carboniferous limestone rocks, its yellow flowers are very beautiful; indeed, I consider it to be one of our most attractive composites, both in its golden blossoms and its deep green flax-like leaves, which are simple, and dotted over with glands both above and below. I have not often seen it wild in this country, but here it flowers and flourishes in the greatest luxuriance. I made its acquaintance on the Orme's Head many years ago, when I first found the rare *Cotoneaster*, growing in the same wild scraggy ground as on the Continent, and *Silene nutans* nodding over the ledges of rock, and attracting such flights of insects in the twilight of a summer's evening. *Rubia* and *Helianthemum canum*, and *Veronica spicata*, and *Chlora*, and *Hippocrepis*, are all here, and each has often been gathered by me in my summer rambles in Carnarvonshire many years ago.—PETER INGRAM, *Llanrhudda*.

The Sea Bindweed (*Convolvulus Soldanella*).—Permit me to say a few words about this pretty native Bindweed, the large pink blossoms of which are a great ornament to our sandy seashores in the summer months, putting forth, as they do, rich bright flowers from the barren drifting sand. But I wish now to speak of the economy which this plant displays in autumn, when the bright flowers are over, and the seed-vessels appear. These are, as in the *Cyclamen*, so deflected that the capsule is buried in the sand, and thus the process of expansion and maturing takes place. On the sandhills on Conway Bay, in North Wales, I have recently had abundant opportunity of noticing Nature's process in perfecting the capsules of *C. Soldanella*. Many, indeed, were nearly buried in the sand. Each capsule contains four seeds, which are black when fully ripe. I collected some scores of these seeds. The leaves of this Bindweed are like those of the Alpine *Soldanella*, hence the name.—PETER INGRAM, *Llanrhudda*. It is indeed a charming plant, which, unlike many other Bindweeds, never becomes troublesome as a weed, and it is quite easily grown in any light soil.

THE HOUSEHOLD.

Preserving Tomatoes.—The following is the method by which the excellent tins of preserved Tomatoes now found so good in winter are prepared. They are first slightly scalded, sufficiently to peel nicely, and when peeled, are thrown into pans in order to let some of the watery part drain off. They are then packed into 2½ pound cans, leaving just room enough for a large spoonful of syrup. This syrup is made by dissolving 2½ pounds of salt, and the same amount of sugar, in one gallon of water. The cans are then sealed and placed on sheet-iron pans, holding thirty-five cans each, and lowered into a vat containing boiling water of sufficient depth to cover them. If a can is not tight, it may be readily discovered by the air which will escape through the hole, causing bubbles to rise to the surface of the water. The leaky can should be immediately taken out and the hole stopped. All kinds of vegetables and fruits put up in cans, should be first tested in this way before they are bathed. When a vat full of Tomatoes has thus been tested and prepared, the pans are lowered into the vat, one top of the other, and the steam let on, allowing the Tomatoes to boil thirty minutes. In case cans larger in diameter are used, longer cooking will be necessary. When the Tomatoes are done, the pans and their contents are hoisted out, and the cans, after they have cooled a little, are vented by opening the prick-hole in the cap with the soldering iron, allowing the steam to escape, and then immediately closing the aperture. When the cans have cooled, if all right, the heads will snap in by a slight pressure, showing that there is a good vacuum.

Origin of the Use of the Tomato.—In August, 1826 or 1827, Andrew Parmentier, who owned the Horticultural Garden at the junction of the Flatbush Road and the Jamaica turnpike, in Brooklyn, asked me to call and see his Tomatoes. The stems were carefully trained on the south side of an embankment of small stones. The first two feet was covered with large, bright, red fruit, which would average, at least, half a pound each. Up to the very stems, for 2 feet or more, they were turning yellow, and green as much farther. They were not smooth, but very much convoluted, and out of shape. Some of the skins were bursting from pressure within, which Mr. Parmentier considered perfection. Mr. Parmentier gave them away very freely among his friends, most of whom liked the attention better than the Tomatoes. Mr. Parmentier was justly very highly esteemed by the horticultural gentlemen in New York, especially by Dr. Howard, Dr. Stephens and his brothers, Hugh Maxwell, Esq., and others. They all tried to eat Tomatoes for Mr. Parmentier's sake, as he was sanguine that it was the vegetable for America, if once accustomed to them. A horticultural dinner was got up expressly to eat these Tomatoes, and the gentlemen and ladies ate them as a compliment to Mr. Parmentier, making as few wry faces as possible. When I next met Mr. Parmentier, he said, with much confidence, that the time would come when Tomatoes would be as common and as cheap as Potatoes, and as universally used. I had previous to this known a species of Tomato, called love Apple, raised as a curiosity, and eaten by some for its supposed medicinal qualities.—MR. SWAIN, in *Cultivator*.

Chestnuts.—This abundant fruit may claim a place, not equal to that of the Haricot certainly, but still an important place, amongst the substitutes for Potatoes. The roasted Chestnut is well known in England, but in France and many other countries it is an important article of consumption. The sale of roasted Chestnuts in Paris is enormous. But the Chestnut, indeed, enters regularly into French cookery; it is used to make stuffing for turkey, and from it is made a *purée*, named after the great Condé, who was a famous gourmet as well as a general, which is eaten with many dishes in place of mashed Potatoes, and is much liked by those who relish a certain amount of sweetness in such preparations. Boiled Chestnuts are also eaten largely in some districts, connoisseurs adding a little butter to them when cut open, but utterly repudiating salt with them, in which we think they are decidedly wrong. In Corsica they form a large part of the food of the country, and in the south of France, and in Spain, they are largely consumed. The Chestnut certainly ranks among the most wholesome and nutritious of fruits, and deserves more consideration than it receives in English houses.

To Cook Rice Properly.—The following is the method recommended by the French Academy for cooking Rice during the siege of Paris. Put one cupful of Rice and one-fourth of a cupful of water in a saucepan, cover and place it over a good fire; after an hour the water will be evaporated, and the Rice cooked tender, but dry, and with the grains distinct, not in a paste. Sufficient salt should be added in the first place, and care should be taken not to disturb the Rice while cooking. By adding a little butter, and allowing the Rice to dry a little more over a gentle fire, a more delicate dish is prepared.

THE LIBRARY.

VAN HOUTTE'S FLORE DES SERRES.

THE third quarter of the twentieth volume of this richly-illustrated work has reached us. With the exception that six of the plates in the parts now under notice are again taken up with Pears, which we cannot but consider out of place in this work, and that no fewer than five of the other plates are re-productions of plant portraits which have already appeared in the *Botanical Magazine*, the plates are most of them exceedingly interesting, and, as usual, specially remarkable for the beauty and delicacy of the colouring—points in which this work excels, by a long way, any other with which we are acquainted. Plate 1 faithfully represents perhaps the most showy member of the Silene family, known either as *S. Hookeri* or *S. Bolanderi*, introduced to our gardens by Professor Bolander, who sent seeds of it to Kew, collected by him on the wooded coasts of Plumas, in California. It is believed to be perfectly hardy, and is now, we believe, to be seen in bloom on the rock-work at the Royal Gardens. Plate 2 represents *Pentstemon Palmeri*, a fine addition to our hardy border plants, introduced to this country by means of seed sent from Utah and other parts of North-western America by Mr. Watson. It is a tall, strong-growing species, producing fine thyrses of bloom, of which the throat is creamy-yellow and the inside of the upper lip bright magenta, with a pale rose-coloured under lip. It is a most ornamental species. Plate 3 represents *Cypripedium arietinum*, a small and insignificant variety of Lady's-Slipper, with dull greenish upper petals and a small whitish slipper, faintly streaked with rose-colour. It is indigenous to North America and Canada. Plate 4, represents a charming miniature Irid from the Cape, named *Syringodea pulchella*, with grassy foliage and rosy-purple Crocus-like flowers. Plates 5 and 6, represent *Doryanthes Palmeri*, an exceedingly handsome and showy member of the *Amarylidaceae* family. It is a native of Australia, and in this country grows well in a temperate house, requiring, however, to be of a considerable age and size before it can produce its splendid spikes of deep blood-red blossoms, with a pure white centre, produced in clusters of two or three blooms on the terminal foot or 18 inches of a stem of from 11 to 12 feet in height. Plate 7, represents a rather pretty member of the *Melastomaceae* family, named *Brachyotum confertum*, and also known under the names of *Chaetogastra* and *Rhexia conferta*; it much resembles *Genetyllis tulipifera* in the shape of its blossoms, which are purple, with a conspicuous white calyx. Plates 8, 9, 10, 11, 12, and 13, represent Pears in fifteen varieties. Plate 14, represents *Masdevallia Houtteana*, a most curious variety of this interesting family, producing medium-sized white blooms, thickly spotted with bright rose colour, and with three bright rose-coloured tails hanging from each bloom, presenting a most singular and unique appearance. It is said to thrive in a cool greenhouse. Plate 15, is a portrait of a member of the *Liliaceae* family, known under the names of *Cyclobothra lutea*, *C. barbata*, and *Fritillaria barbata*. It is a native of the Mexican prairies, and produces, somewhat freely, pendulous blooms of a deep yellow. Plate 16 is a portrait of *Aquilegia leptoceras chrysantha*, the beautiful Golden Columbine introduced from New Mexico and the state of Arizona, and we think hardly does justice in clearness and brilliancy of colouring to this fine addition to our hardy garden border plants, which is so free-flowering and so easy of cultivation that it should be found in every well-stocked garden. Plate 17 represents *Seaforthia elegans*, a most beautiful and graceful Palm from Australia, which, from its ornamental foliage, is likely to be useful for room and table decoration, as it thrives in a low temperature. Plate 18 represents *Odontoglossum Rossii majus*, a beautiful Orchid from Mexico, first introduced under the name of *O. Ehrenbergi*, and of easy culture. Plate 19 represents *Aristolochia tricaudata*, a most curious species of this extraordinary and generally attractive family, but of somewhat more distinct and conspicuous colouring than is usually found among them, introduced from the forests of Chiapas, in the extreme east of Mexico, by Ghiesbreght, who sent it to M. Verschaffel, of Ghent. It requires the temperature of a stove, as do all this family, with the exception of *A. Siphon*, which is hardy. Plates 20 and 21 represent *Stanhopea Martiana*, a handsome species of this genus of Orchids. Plates 22 and 23 represents a bunch of Grapes and foliage, the berries of which are not remarkable for size, but for having deep-red juice, and whose foliage turns a fine red in autumn. This Grape is also said to make good wine, but is useless as a table fruit. Plate 24 is a portrait of *Calochortus Leichtlini*, a beautiful variety of this lovely family of Californian bulbs, producing large pure white flowers with a clearly marked deep maroon spot at the base of each of its three petals. It is almost hardy, requiring only the protection of a cool greenhouse or cold pit. Plate 25 is a portrait of the beautiful *Erythronium grandiflorum*, producing from eight to ten of its handsome pure white flowers on stems from 18 inches to 2 feet in height; it is a

native of the Rocky Mountains. Plates 26 and 27 represent the handsome Indian Cycad, known as *Cycas circinalis*, said to be the finest of its family, and requiring only the temperature of a temperate house. The natives of the parts where this species is indigenous, make its pith into a kind of sago, and use its leaves for thatching their houses; the down of its foliage they weave into stuffs for garments; with its leaf-ribs they make ropes, and its nuts, when roasted, form one of their favourite foods. W. E. G.

LESSONS TAUGHT BY THE LATE DRY SUMMER.

THROUGHOUT the greater part of the country drought has been severely felt this summer; in some parts it has been disastrous to the farmers, and, coupled with dry and frosty nights, it has had disastrous effects on nursery stock and on gardens generally; wherever trees and shrubs have been recently moved on any extensive scale, even those moved early last autumn with balls, and which looked quite fresh up to the middle of April, though quite taken to their new positions, suffered nearly as much as those spring-planted, simply because they had not had time to root deeply. Where the moisture became exhausted from the immediate surface, they were in equal distress with those planted in spring. In pulling up some shrubs lately which were dead, or seemingly so, a rather curious appearance presented itself; the roots were bristling with young white growing points, showing that there was plenty of life there, although the knife showed by cutting the bark that the stems were dead to the surface of the soil. Those plants (*Cupressus Lawsoniana*) had been repeatedly watered, but had failed to keep the part above ground alive; evaporation had been so rapid throughout the heat and dryness of the day, and coldness and equal dryness at night, that the plant became exhausted in consequence: shade, therefore, in this case, would have been much more beneficial than watering, but for the practical difficulty of shading trees and shrubs by the acre. Exhaustion, I need not say, in a more or less aggravated form, was the general result, but in a very different degree on different subjects; whereas some plants became permanently paralysed, others only seemed to husband their energies and become exhausted in appearance only. Broad-leaved plants, such as *Rhododendrons*, *American Azaleas*, and the broad-leaved Japanese plants, suffered permanently, especially those subjected to the full blaze of the sun, and I believe more from actual heat than from drought; the thermometer at 100 and 120, with the sun blazing on them, actually had the same effect as fire, and the atmosphere heated to that extent would not have affected the plants in the same way had they been shaded. Almost the whole of the *Coniferæ* stood the drought well, their wiry foliage being capable of withstanding a dry atmosphere. Now, since rain has fallen, however, recently planted subjects have grown well and made good roots. This is strikingly illustrated in the case of two specimen plants—*Thujaopsis dolabrata*—both of which had in winter occupied prominent positions temporarily for the purpose of decoration, from which they were removed in March. It was June when one of them became extremely dry at the root, while the other was even wet; both are equally fresh at top, but the dry one has made an enormous mass of fresh white roots, while the wet one had not made any. What has been the cause of this important difference? Was it the comparative warmth consequent on dryness that encouraged root-action, or the natural effort of the plant to obtain for its healthful existence moisture which the other enjoyed? The moist atmosphere of winter prevented exhaustion in the case of the dry tree. Probably *Coniferous* trees, as a whole, prefer a moist atmosphere and a moderately dry soil. Their natural habitats support this idea; the various forms of *Cupressus Lawsoniana* seem to stand drought the worst.

In the kitchen garden the heat and drought have had similar effects on vegetables. Broccoli, Cauliflower, and Cabbages showed exhaustion, in spite of much artificial watering. Onions, on the other hand, though they assumed that glaucous bluish-green which is the effect of drought, made good their hold in the soil, and when rain came made quite a rush into growth. Water in their case, under a scorching sun, would have been beneficial; but the Cabbage tribe, under strong sun, even with sufficient root moisture, make a flaccid and weakly growth. Herein lies the superiority of the north over the south in the matter of raising small fruits and succulent vegetables. A hot dry atmosphere will cause young Cauliflower to "bolt" and open their heads in spite of good cultivation, and Cabbage will refuse to make solid crisp hearts; but we in the south may fairly claim to know more about the cultivation of French Beans, Scarlet Runners, Tomatoes, and Vegetable Marrows, than growers in the north. Such a season as the past teaches us lessons which have been learned generations ago in Spain, where the value of irrigation is well known. All watering under such intense heat is useless unless thoroughly well done. This

I have been in a position to prove this season by having an abundant supply of water in some places and a scarcity in others. At one point I was able to allow water to run in a stream among some Roses, and their freshness and fineness of bloom formed a complete contrast with others not so treated. Moreover, these irrigated Roses have been completely free from blight, while others were hopelessly infested. I also irrigated a large portion of flower garden under bright sunshine with the best results. No garden can be called complete without a ramification of pipes and hydrants, and an abundant supply of water, which is procurable in the majority of gardens. Water is more particularly necessary in the fruit garden than in any other; for flowers and vegetables are too apt to get a full share of water at the expense of fruit trees. Heat and dryness have a maturing effect on the wood of fruit trees when in conjunction with plenty of nourishment at the root; otherwise, they have a decidedly exhausting effect; and although wood may appear ripe, and abundance of fruit buds may have set—say on Peach trees—the following spring will most assuredly tell a tale of bud-dropping, fruit not setting, and disappointment at the stoning period; and the same remarks apply to fruit trees in general. Shade is a most important auxiliary in a variety of cases during a season of excessive heat, especially in the case of newly-planted trees and shrubs; while watering at the root will be found of no avail to keep plants alive, shade in some form or other will be quite successful. It obviates the scorching effects of the sun on a plant the cultivation of which has been impaired by removal. Materials for shading need not be expensive or difficult to get. Branches of Spruce or of common Laurel, even a handful of Grass or straw thrown over a plant, will shade it sufficiently to carry it through a trying time. The shade of trees to Grass enables it to retain its green appearance, while that exposed to the sun is scorched to the colour of hay. It is a bad practice to mow Grass too closely in times of heat and drought. Grass shades itself, and mulches the ground, and so prevents the sun from drying up the soil. Moreover, Grass condenses moisture, in the form of dew, for the maintenance of its own growth. Without Grass, dew is not deposited; therefore, lawns should not be too closely mown in very dry weather. All that is necessary for appearance is an even surface, which can be effected by adjusting the cutters of the machine by a sufficient depression of the front roller. Akin to shade is the benefit derived from the use of the syringe in the case of newly-planted shrubs and trees. Moistening the leaves and branches in the evening assists the leaves materially to maintain life. It may, sometimes, be possible to moisten a whole clump of shrubs or trees by a hose from a hydrant; or, when such is not attainable, a large garden engine and attendant water-barrel will effect much with the labour of two men. With several hundred feet of hose and a small hand fire-engine, we have been able to do good service among shrubs and trees lately planted. A dry spring and a heavy soil have taught us the lesson that the early autumn is the best time to transplant trees and shrubs, not excepting Hollies and Conifers. There is one class of plants that shows wonderful tenacity of life under heat and drought—namely, Mosses and Lichens. No plant seems to enjoy moisture more than they do, even to saturation, when they grow with wonderful rapidity, yet none stand draught better. The sun does not seem to have the power of killing many of them, even on stones that become so hot that one cannot bear the heat with the hand. Even some Ferns bear dryness with impunity. Large masses of the common Polypody may be seen perfectly dried up; to all appearance the fronds are gone, yet, with the first rain it springs into a mass of verdure.—*The Gardener.*

Lord Palmerston on Iron Railings in the Parks.—"94, Piccadilly, Nov. 12, 1857.—My dear Hall,—I have been much surprised this morning at seeing a party of labourers employed in trenching a large piece of the Green Park. As head of the Government I have a right to expect that essential alterations should not be made in the spaces allotted for the enjoyment and recreation of the public without my previous sanction and concurrence, and I entirely disapprove of the restrictions which you are imposing upon the free enjoyment of the Green Park and Hyde Park by the public. Your iron hurdles are an intolerable nuisance, and I trust that you mean shortly to remove them. To cut up the Green Park into enclosed shrubberies and plantations would be materially to interfere with the enjoyment and free recreation of the public; and I must positively forbid the prosecution of any such scheme. As head of the Government, I should be held by the public to have authorised these arrangements, and I do not choose to be responsible for things which I disapprove.—Yours sincerely, PALMERSTON. Right Hon. Sir Benjamin Hall, Bart." The above, from the "Life of Viscount Palmerston," does not appear to have had all the effect that could be desired in modifying the too numerous and ugly iron railings in our parks.

MR. LEY'S NURSERY, CROYDON.

THIS nursery, though comparatively newly formed, has already become interesting to the plant-lover. An elegant conservatory (of which the annexed is a representation, engraved for THE GARDEN from a photograph) has just been erected in it by Mr. Lascelles, and is remarkable as proving that it is possible to have horticultural buildings made of wood as light and graceful as any constructed of iron. Hitherto it has been supposed that to have curvilinear houses we must resort to iron. Mr. Lascelles now builds them for us in wood, having as easy lines as the fine iron curvilinear houses built by Mr. Turner, of Dublin. This seems to us to effect a revolution in the art of hothouse building, and a very desirable revolution, too. The curved wooden spandrils of the roof consist each of three pieces, bent by steam, and very accurately fitted together. Although, however, the spandrils are bent, the glass is not; and in this there is a decided advantage, inasmuch as a difficulty is often experienced in replacing broken squares when such is the case. The interior is divided into three compartments, which afford plenty of space, not only for plants of comparatively small size, but also for the larger forms of tropical vegetation.

Palms.

One thing worthy of mention here, is the fine collection of Palms, numbering upwards of 170 species, all in a healthy thriving state, and well adapted for the general purposes of indoor decoration. Here are thousands of individual plants in all the different stages of development, from the seedling state to splendid well-developed specimens, and we are glad to see that Mr. Ley attaches so much importance to this noble family, which seem destined to become even more popular and useful than at present. In the different houses we were shown from 10,000 to 12,000 seedling Palms, such as *Seaforthia elegans*, *Areca rubra*, *A. lutescens*, *Corypha australis*, and many others of well-known excellence as decorative plants. Among the rarer kinds we may note *Cocos plumosa*, *C. Weddelliana*, one of the most graceful and effective of all decorative plants for the dinner table, *Dæmonorops fissus*, *D. plumosus*, *D. palembanicus*, and others equally graceful. Among the newer kinds, *Cocos Maximilliana* deserves mention as a graceful species, somewhat resembling *C. plumosa* in general habit. *Phycosperma Alexandræ* may be described as a silvery-leaved form of *Seaforthia elegans* from Lord Howe's Island, and is a plant likely to meet with general culture when fully developed and better known. One of the finest specimens in the whole collection, however, is *Chamærops tomentosa*, one of the most graceful forms in the genus, the slender divisions of the fan-shaped leaves being covered below with a dense silvery tomentum, which gives it a very distinct and pleasing appearance. This plant is fully 8 feet in diameter, and is one of the finest of all decorative Palms, either for indoor decoration or for exhibition. A fine healthy plant of *Chamædorea Hartwegii*, bears a great panicle of rich orange-scarlet fruits as large as Peas, and when in this state it forms a very ornamental plant. All the *Chamædoreas* are beautiful, especially when in a young state, from 2 to 3 feet in height, while their coral or ivory-like panicles of bright berry-like fruit render them peculiarly beautiful and distinct from nearly all other slender Palms; even when not in fruit they are graceful fresh green plants, and many kinds are valuable for the decoration of apartments, as they will succeed in a moderate temperature.

Ferns.

These graceful plants are quite a speciality here, and the collection, besides including those most generally grown for decorative purposes, also includes many rare and interesting species rarely met with, except in the best public gardens. The collection generally is a very select one, containing a large stock of healthy plants of such species as *Adiantum Farleyense*, of which alone we saw at least two hundred fresh little specimens; *Adiantum sulphurium* is another pretty little novelty, the stock of which Mr. Ley was fortunate in raising from spores two or three years ago. This is commonly known as the Golden Maiden-hair, and when well grown is one of the most delicately beautiful plants in the genus. Another old favourite is the deciduous *Adiantum lunulatum*, which does remarkably

well here, producing fresh green fronds from a foot to nearly 18 inches in length; *Todeas* and *Hymenophyllums* grow well; and a very distinct *Selaginella*, named *S. californica*, is a very interesting addition to the genus. In habit it may be described as resembling *S. caulescens*, but the growth is much more robust, of a deep glossy-green colour, and the broad scales are imbricated closely, just like the scales on a snake's back. This will be much liked by cultivators of *Lycopods*. A new *Lycopodium*, with umbrella-like tiers of fresh green growth, is very distinct in habit from anything we have seen. This has only recently been introduced, and is only an inch or two in height, but it shows signs of being well worth general culture as a decorative plant. Among many choice *Adiantums* we noted *A. scutum*, *A. caudatum*, *A. decorum*, *A. amabile*, *A. cardioclæna*, *A. rubellum*, and others, as well as the fresh

beautiful *A. Victoriae*, grow luxuriantly, forming charming tufts of gently-arching fronds of the freshest green tint imaginable. Great tufts and masses of the Oak Fern (*Polypodium dryopteris*) also do well here, together with the pretty little *Lomaria alpina*, *Cystopteris fragilis*, and a great many North American *Osmundas*, such as *O. cinnamomea*, *O. gracilis*, *O. cristata*, *O. Claytoniana*, and other Ferns. Mr. Ley imports many hardy Ferns from America, and, in addition to the *Osmundas*, we may note the charming *Adiantum pedatum*, some pots of which would bear comparison with any other exotic species, for graceful beauty and vivid freshness. The rockery above referred to is sheltered and shaded by a belt of Poplars and Weeping Willows, which form a cool and shady retreat during the hottest of the summer weather. The rock-work itself is artistically formed of cement, on a ground-work of



Curvilinear Wooden Conservatory in Mr. Ley's Nursery, Croydon (erected by Mr. Lascelles).

green *Asplenium formosum*, and *A. Fernandezianum*, all rare and beautiful Ferns, well worth culture. In one of the houses here we were shown a rather novel method of propagating hardy Ferns by cutting the fronds, a system by which it is possible to increase the stock of new and rare varieties in a comparatively short time, as compared with the older method of propagating by division. The kinds so treated were *Scolopendriums* and *Polystichums*, and we were assured that fifty per cent. of these frond-cuttings root freely and form plants. Hardy Ferns are grown in quantity, and some of these are really little less beautiful than their tropical representatives. Mr. Ley has constructed a shady rock-work for hardy Alpines, Ferns, and herbaceous plants, extending along one side of his Lansdowne Road establishment, and many of the beautiful forms of *Athyrium filix-fœmina*, such as *plumosum*, and the

stones and clinkers, and the general effect is as natural and excellent as the limited space at command will allow. This rock-work, enlivened by the pleasing sound of trickling water, forming as it does a cosy sheltered retreat, and an excellent position for the culture of Ferns and other choice shade and moisture-loving plants, shows us what can be done in hundreds of little town and suburban gardens; while the result attained, although perhaps a trifle more costly in the first instance, is far more satisfying than the everlasting strip of turf, cut up into intricate designs, and intersected by walks leading from everywhere in general to nowhere in particular. Gardens, small ones more especially, where expense is an object, should be so laid out, that they cost but little to keep them in order, and they ought to increase in beauty every year. This can never be the case where complicated designs are carried out,

and a host of bedding plants are required every season. Mr. Ley has rather a novel method of growing *Stephanotis floribunda*, which simply consists in pruning in the young growth like a Vine, after which the long shoots are brought outside the house through a hole in the wall, and trained out at the end or side fully exposed to the sun and air. Thus treated the growth becomes thoroughly hardened or ripened, and after the plant is trained inside the house again in the autumn, an immense crop of flowers is the result. This is a most excellent plan to adopt in order to secure a succession of its pearly-white sweet-scented flowers late in the season, and, at the same time, the plant is kept free from mealy bug, brown scale, and other insect pests, with which it is so often infested when grown inside the house in the ordinary way. Some very fine specimens of *Eucharis amazonica* were also turned out-of-doors to rest. These plants were, however, not allowed to become dry at the root, but simply turned out into the light and air, so that their bulbs might "plump up" and become thoroughly well ripened; so treated, Mr. Ley finds nearly every bulb to throw up a strong flower-spike soon after they are removed to more genial quarters, the result being a profusion of sweetly-perfumed snowy-white flowers, at a season of the year when they are most required, and when they fetch the best price in the market. B.

MR. MEEHAN ON THE ORIGIN OF NEW PLANTS.

In any theory of evolution, morphology must play an essential part. In the transformation of a leaf blade to the various organs of a plant the change is sometimes gradual, as in the passage from leaves to bracts in some orders, or from sepals to petals, petals to stamens, or stamens to pistils in others; but the cases where the change is from one form of structure to another of very different character is by no means rare, and if it can be proved that change with gradual modification and change by the sudden appearance of a distinct form are both good morphological laws in plant life, there is no reason why both laws may not operate in any scheme in which morphology is called to act. How suddenly the parts of plants often change is well illustrated in most Coniferous plants. The *Pinus*, on the first pushing of the axis from the Cotyledonous condition of the plant, flat leaves are developed often an inch or more in length. After some time these leaves are suddenly arrested, and the axillary buds as suddenly develop into fascicles of needles, as they are popularly called. So when the plant reaches its floral condition, the transformation of leaf and stem into the various parts which constitute a cone comes on with wonderful suddenness. The leaf which we saw so suddenly arrested in early life now becomes a bract, the fasciculi combine and form the scale, and the axis suddenly ceases to elongate and gives form to the whole. The one in search of missing links would be sadly puzzled here! This sudden change of folial organs to organs of inflorescence is very common. In the change of one portion of a leaf structure to another, *Magnolia* and *Liriodendron* afford an interesting example. In many plants the regular leaf-blade is metamorphosed, and forms the petal, but in these, as soon as the plant reaches its flowering stage, the leaf-blade is suddenly and entirely arrested in the formation of the petals, and the stipules are as suddenly developed. The petals are, in fact, highly developed and transformed stipules, and all without the slightest trace of gradual modification. So in sexual transformations the modifications are by no means always gradual. One who had never seen the Maize growing would hardly believe the tassel and the ear were from one plant, yet they are formed morphologically on the same plan, and once in a while we find male flowers gradually merging into female, and females to males in the respective domain of each, but this is the great exception to the general rule. Now we come to variations from specific form, and here I find great changes with no transitional forms between. I have a *Halesia* from seed of *Halesia tetraptera*, which anyone might be pardoned for placing in a new genus. It is much further removed from its parent than *H. diptera* is. The corolla is not drawn up into a funnel-like tube as in the original, but is cupular and barely the length of the stamens. The leaves are broadly ovate and rugose, and no one at first glance would take it for a *Halesia*. When I first saw it in the seed bed I supposed it to be a young Apple tree. I have on my grounds large quantities of *Yucca filamentosa*. Hundreds of plants throw up their flower spikes and open their first blossoms within twenty-four hours of each other. But some years ago one struck off to have a more branching panicle and to open its flowers two weeks before the others, which characters remain and are continued in the progeny. This two weeks was not gained gradually, day by day, through successive generations, but in

one great leap. So with raising Peaches or other varieties of fruit. Though the progeny usually take to the general habits of the parent, there will be, once in a while, very late varieties from seeds of early ones, and very early from late kinds. In Delaware and New Jersey *Azalea viscosa* varies to a form having glaucous saliciform leaves. I have not raised these up from the seeds, but I have seen an extreme form, with leaves looking rather like the English Woodbine than an ordinary *Azalea viscosa* growing under ordinary circumstances, which left no doubt on my mind that it sprang without any intermediate links from the other form. *Glyptostrobus* is another remarkable case. I exhibited branches from a tree raised from seed of *Taxodium distichum* and branches from an acknowledged *Glyptostrobus pendulus*, and no one could separate them. Here is a leap at once to a new genus. Moreover, I have a *Thuja* growing, which the highest authorities insist is a *Retinospora*, but which I know was raised direct from the *Thuja occidentalis*, without any intermediate parent whatever. Some genera seem very variable. Take our common Ox-eye Daisy for instance, and then, say in *Staphylea*, we may examine hundreds of plants without any apparent variation. But in the variable genera it is a mistake to suppose that these variations are by gradual modifications, though one can often place them so as to appear like gradually-approaching links. It is wonderful how many variations there are in the common Ox-eye Daisy. I have studied them closely for years, and find that the most divergent forms are often parent and child. I do not know anything that more exactly repeats itself than *Glycine frutescens*. Every leaf is exactly ovate, with an upward turn from the mid-rib; but in its variety, known in gardens as *G. magnifica*, the leaves are regularly attenuated and reflexed, and the whole manner so different, that some have supposed it a distinct species, with the name as above. Not only do strikingly distinct forms come suddenly into existence; but, once born, they reproduce themselves from seed, and act in every way as acknowledged species. The Peach in its general form has its branches at a very acute angle upwards; I never saw a plant with branches approaching a right angle; but some thirty years ago one came into existence with a strong angle downwards, a weeping variety, and seeds of this reproduce this form exactly in every respect. So with colour. The Peach is of a uniform green—no tendency to vary its shade—but ten years ago, a deep blood-leaved variety appeared. The deep blood-leaved Peach is also a rapid jump from the green, and reproduces the blood-leaved character from seeds. The Siberian *Arbor-Vitæ* is another great leap from the *Thuja occidentalis*, and reproduces itself from seeds, as do all the striking forms in which this species abounds. Indeed, I think, I may close this branch of my subject by the statement that in over a quarter of a century of experience among living plants, I have rarely known any striking form to have originated by gradual modifications, but always by one great leap. The slight changes are generally in efforts backwards, as when we sow purple Beech seed some few are a trifle paler than their parents—there is little of this hesitation in the forward leap. But even reversions are not always gradual. Some years ago the common Babylonian Willow sent out branches suddenly which bore singularly curved leaves, just as the Nectarine is said to have suddenly sprung from the Peach. The cuttings grew and maintained the character. It is known as *Salix Babylonica annularis*. A few years ago I saw a tree, perhaps twenty-five years old, push out the regular Weeping Willow leaves. This fact in regard to the Willow suggests another great principle. Forms are not only called into existence suddenly, widely different from parents, and can reproduce themselves from seed, but they come into existence without seed agency, and the same or similar form in widely-separated localities, and not all necessarily by seed from one individual. I have had sent me from five different localities, flowers of *Viola pedata* in which the two upper petals were of the beautiful maroon characteristic of the Pansy. Again a whole change of character will occur suddenly in many individuals through a large extent of country. This season, in our part of the world at least, half the leaves of the *Liriodendron* are from five to seven lobed; when, as it is well known, the three-lobed character has been almost specific in former years. We are accustomed to say about these changes that they are "caused by climate;" but this expression proves nothing. We have in Pennsylvania a form of *Viola cucullata*, usually growing in wet places, which always causes the breast of the young botanist to thrill with the idea that he has a new species. The paler colour and more delicate growth, when the plants are seen in the aggregate, are very striking. But when the plants and flowers are analyzed, no difference is found that can be described in words. A review of the facts I have presented shows, I believe, the following truths:—1. Morphological changes in individual plants are not always by gradual modifications.—2. Variations from specific forms follow the same law.—3. Variations are often sudden, and of such decided character as to be deemed generic.—4. These sudden

formations perpetuate themselves, and act in all respects the same, as forms which spring through gradual modifications.—5. Variations of similar character occur in widely separate locations.—6. Variations occur in communities of plants simultaneously by causes affecting nutrition and perhaps by other causes. Arguing from these, new and widely distinct species may be suddenly evolved from pre-existing forms without the intervention of connecting links.

THE ENGLISH IN THE NATURAL PARKS OF COLORADO.

We lately spent two delightful days in Bergun's Park, which beautiful retreat lies about 1,000 feet higher than Manitou, and is reached by a charming drive of 17 or 18 miles up the wild Ute Pass. We were the guests of Mr. Thornton, an English gentleman of good family, and a graduate of Cambridge, but quite content with this rough secluded life, and proud to be a ranchman. The English younger sons who do not go into the Church or the army come to Colorado. Well may this particular ranchman be proud; for the ranch which he owns, in partnership with his friend, Dr. Bell, is fit for a royal domain. It is royally grand and beautiful, and, though so high up, is largely under cultivation, yielding the best of Wheat, Oats, Barley, and all varieties of vegetables, while for grazing purposes it is unsurpassed. Nothing can be lovelier, more still and peaceful, than this magnificent ranch, lapped on the mountain slopes, and set about with primeval Pine forests. Through it runs a clear trout stream, fringed with Willows, and low-lying meadows and uplands are almost alike green and flowery. It is a vast amphitheatre—mostly wild, of course, yet has a strangely pastoral and home-like aspect. It reminds one of the "Happy Valley of Rasselas" in its sublime seclusion. The scene has all the purity of atmosphere, all the sombre inspiration of the mountain; all the tranquility and coziness of the valley land. We found the brilliant noon-day hot, even here, but the nights were deliciously cool and balmy. Bergun's Park contains some of those curious and imposing monumental rocks of red sandstone which are such a marked feature in all this region. They are of a peculiarly weird character, and full of grotesque forms and faces, such as we find about old cathedrals. Indeed, some one has named the largest of them "the devil's minsters." Though the ranch is apparently closed in, except on the side of the great pass, down which you look till Pike's Peak seems to block the way, and to compel the morning to climb over him, a ride or drive of a few miles brings one to mountain points whence views of surpassing loveliness and grandeur can be obtained. Mr. Thornton has within the past year erected a new ranch-house, roomy and pleasant, with open fireplace as spacious as the one in that grand old feudal hall of Warwick Castle, and also three cottages for visitors. One of these, however, is designed for private use during a portion of the year, being the forest lodge of a wealthy English lady. It is a marvel of rustic comfort and picturesqueness. This was assigned to us, and we had rare delight in it. Each evening, after watching out the sunset, which paid its last salute to Pike's Peak, we left the pleasant verandah for the large sitting-room or hall, where we gathered about a flaming fragrant, open fire, and told stories and "laughed at little jests," and, in short, were happy and glorious, with the larger part of the human race far below us. It is good to get above the world. I cannot too highly recommend this charming mountain retreat to invalids who can do without, and ought to do without, the excitements of a fashionable watering place; to mothers with delicate children; to students who can take with them the goodly company of books; to artists, seeking quiet studies; and to sportsmen eager for deer-stalking and bear-hunting. There are no wild creatures on the settled part of the ranch, but off on the mountain sides and at certain points on the creek, where they come to drink, by cautious hunting you will always find them. Sometimes they find you. To fully enjoy Bergun's Park, visitors should take saddle-horses, in order to explore in all directions the fragrant forests of Spruce and Pine—almost as clear of unsightly brush and undergrowth as English woodlands. But they also thrive who only rest and eat. The ranch-house table boasts delightful English cooking—light, snowy bread, delicious butter, juicy beef, tender mutton, game in season, fresh eggs and vegetables, abundance of milk and rich cream, such as the lower world has forgotten since it has gone up so. And, to crown all, the prices of board, with lodging, in those royal log cottages, are much lower than at lower hotels. I hope that another season a host of happy tourists will find out for themselves this mountain haunt of loveliness and health—this darling retreat of Nature, so far and so fair—this glorious little epitome of Colorado. [The above description by Grace Greenwood, in the *New York Times*, must be understood to refer to an oasis in the far from attractive deserts of the "Great West."]

THE KITCHEN GARDEN.

POTATO CROPS IN WORCESTERSHIRE.

WITH an unusually dry summer up to September, we have been enabled to harvest our crops of early and second early Potatoes, that were planted early in the season, in the best possible condition, and perfectly free from disease. Previous to the occurrence of rain I had not discerned a single trace of blight; and even late sorts, now that the season is so far advanced, and the tubers maturing rapidly, may be expected to produce a full average yield, notwithstanding that, with the advent of rain, disease manifested itself in its usual form. Tender sorts are now suffering severely from it, and there cannot be a doubt that, with increasing moisture in the soil and increased atmospheric humidity, the infection will spread rapidly. I would, therefore, suggest that no opportunity be now lost in lifting and harvesting. More particularly is this to be recommended as the tubers are making a second growth actively, and, in some instances, super-tuberating, which will quickly and materially deteriorate their quality. Notwithstanding all that has been said and written respecting the disease we have not yet discovered any certain cure for it. Previous to the great failure in 1845, no particular mode of cultivation was practised; ordinary field Potatoes were planted generally in drills upon the grossest of manures, and generally with the best results. Now we find that such manures applied at planting time, more particularly in the case of late kinds, are apt to favour the disease, and, therefore, should always be avoided, as should also land that is rich in humus. A fresh soil suits Potatoes best, and the manure should always be applied months previous to planting, incorporating it thoroughly with the soil. Lime is also an excellent fertiliser for this crop; and early planting cannot too often be recommended, as it favours early maturation and facilitates early lifting, thus avoiding, as much as possible, the autumnal rains which so much encourage disease; for in dry weather it makes but slow progress. We hear from time to time that certain kinds are "disease proof," but, if so, I have never yet seen them. Certain coarse-growing sorts with hardy constitutions, however, withstand the disease better than others, as, for instance, the Rough Red, &c., but these semi-disease resisting varieties are, for the most part, poor in quality, and not to be compared with such standard sorts as Victoria, Spencer's King of Flukes (an excellent sort), Carter's Main Crop, Red-shinned Flour-ball, which is good upon some soils, and beautifully white when mashed, also a great cropper; King of the Potatoes, a good and prolific variety of fine and even size; and the various sorts of Regents, which are all of good quality. As we are powerless, both in evading and stamping out the disease, it behoves us to select varieties of good quality with strong constitutions, and to plant them early upon thoroughly drained well prepared soils, in order, as much as possible, to encourage early maturity, on which, as I have said, success in Potato growing mainly depends. GEO. WESTLAND.

The Gardens, Witley Court, Stourport.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Sawdust a Better Plunging Material than Tan.—For some years I have used sawdust extensively for plunging Pines in, and nothing can be more satisfactory than it is, the heat being lasting and genial, while the actual work in plunging a pit of Pines is not only pleasant but in appearance superior to that of tan or leaves. I have a vivid recollection of the condition of my poor trowser's-knees when plunging Pines among fresh tan.—R. GILBERT, *Burgledy.*

The Hertfordshire Dwarf Cauliflower.—I have tried a great many sorts of Cauliflower, but have found none to equal this and Veitch's Autumn Giant, two kinds which have withstood the late dry summer so well that, for the future, I have made up my mind to grow no others. The Hertfordshire Dwarf is especially excellent, and I would recommend those who wish to have a good Cauliflower all through the season to give it a trial.—RICHARD NISBET, *Asenbury Park, Falingham.*

Clubbing.—Large numbers of the Cabbage tribe in Berry Grove Gardens have clubbed this season; Mr. Bridger, therefore, took up the plants, cut off the affected portions of the roots, and replanted. All thus treated, with one exception, have grown into fine healthy plants. Is this mode of treatment generally practised? It was new to me, for I had invariably seen Cabbages and Broccoli that had clubbed taken up by our gardener and thrown away.—HELEN E. WATNEY.

Flue-heated Cucumber Pit.—I have a pit 6 feet wide and 33 feet long. Its back wall is 9 feet in height, and the front one 2 feet 6 inches. The bed is 4 feet wide; the path 2 feet, with ventilation at back and front. Will you instruct me as to the best method of heating this by means of a flue, so that I may cut Cucumbers from April to the end of October?—G., *Yorks.* [A house or pit of the width just given cannot be heated by a flue with safety otherwise than along the back wall. To increase the heating surface, the fire-place should be at one end of the house, and sunk deep enough to permit the bottom flue being carried along in the back wall, about 1 foot or 18 inches above the path level, to the other end of the house; and it should return again by another flue, just above the bottom one, to the fire-place, above which the chimney should be placed. The flues must be square, not round, and immediately above the top flue the wall should be pigeon-holed, which will greatly increase the heating power. Any intelligent bricklayer understands how to make such a flue. If the house is heated in this way, there will be no difficulty in keeping up sufficient heat for Cucumbers for six or eight months in the year.—J. S. W.]

THE GARDEN IN THE HOUSE.

BUTTON-HOLE BOUQUETS AND COAT FLOWERS.

Few seem to understand that there is any difference between a button-hole bouquet and a coat flower; yet there is, and a very great difference too, the flower being, as the word signifies, a single bloom, whereas a bouquet means a number of flowers arranged according to taste. Many opinions have been expressed as to the proper arrangement of cut flowers, but, with a few exceptions, button-hole bouquets have been excluded, probably, because being small, people have imagined that they must necessarily be easily made. No combination of flowers, however, requires to be put together with more taste, or to be more lightly done, than a properly made button-hole bouquet. Flowers selected for this purpose should always be good, particularly those for mounting singly, which should, in fact, be specimens of whatever kind is chosen. Ferns, I always like to see in such bouquets, and also along with coat flowers, provided these are stove or greenhouse kinds; but hardy flowers I like best mounted with their own own foliage alone. Nearly all flowers for bouquets of any sort should be wired; indeed, many could not be used for that purpose at all were they not mounted on wire, as for example, the pips of white Hyacinths, which in winter are amongst the most useful flowers that we have. There are, however, other ways of mounting flowers besides wiring them. Let us take, for example, a *Gardenia*. The centre petals of this flower—indeed, all except the outside row—are very even and lovely; but their beauty is somewhat marred by the outer ones, which look twisted. Now, to remedy this evil, and to make them look all even, proceed as follows:—Take a common Laurel leaf, and cut a piece out of it, about an inch or so square, with a pair of scissors; trim round the corners, so as to make it almost circular; then cut a cross in the middle, and down through that push the stem of the *Gardenia*, until the flower and the Laurel-leaf are pressed tightly together; then hold it upside down, and through the stem, close to the leaf, pass a “stub” wire (which will keep the leaf in its place); bend the ends down, and fasten them together with a little binding wire, so as to form a stem. The petals of the flower can be then arranged so as to occupy their proper places, and, the piece of Laurel-leaf being so tight to the flower, they will remain wherever they are placed. There is also another point to which I would wish to direct attention, and that is the foundation of the button-hole bouquet, which is generally a piece of Maiden-hair Fern; but that is not stiff enough in itself to form a good support for the other flowers. To remedy this, the best plan is to back the Fern with a small *Camellia*-leaf, wired, which will keep the whole bouquet firm and in shape. The following arrangement is that generally adopted: at the back is a spray of Fern; next, some long light flower, so as to form a kind of point or finish at the top; then a *Camellia* bud or Rose, or some such flower, and then Maiden-hair Fern and whatever other small flowers are at hand. A bouquet, to look well, may consist of a white *Camellia* bud, some sprays of *Lily-of-the-Valley*, blue Squills, &c., and Maiden-hair Fern. I once made one of a half-open white *Camellia* bud, a spray of *Hoteia* (*Spiræa japonica*), and a few pips of white Hyacinth, mixed with a little Maiden-hair Fern, and many remarked that it was very light and elegant. That which took the first prize at the Royal Horticultural Society's Show at Birmingham, in 1872, was composed of a yellow Rose bud associated with blue *Forget-me-not*, a pip of *Kalosanthes coccinea*, and one of white *Bouvardia*. I have seen one made of *Lily-of-the-Valley*, a blush-coloured Rose bud, and the same shade of Hyacinth pips, with a little Fern worked through it; this was a neat-looking little bouquet. Another consisted of a spray of *Lily-of-the-Valley*, a yellow Rose bud, and a few pips of a rich purple *Cineraria*, which came out well against the deep colour of the *Maréchal Niel* bud. I could give descriptions of many others, but think that those which I have mentioned will suffice to show the best shape and style in which such bouquets should be made. Ferns used for button-hole or, indeed, for any kind of bouquets, should be cut off plants that have been grown in a cool house or that have, at all events, been well hardened off;

otherwise, though they may look nice and fresh when cut, they shrivel up in a few hours, when, of course, their beauty is gone. In the case of Maiden-hair, it is a good plan to cut off the very young points, as, with the exception of these, the other parts of the frond keep well. Another point that should be remembered, is always to keep the stems of the bouquets as thin as possible, in order that they may easily pass through the coat, and nicely fit the little glass water-tubes which are now so much worn, and which keep both Ferns and flowers fresh so much longer than they otherwise would be. After the bouquets are made, many place their stems in water, to keep them fresh; this I do not think a good plan, as, though the stems may be in the water, the Ferns are exposed to the air, and, thus circumstanced, they will not keep nearly so long fresh as if they were shut up in some air-tight box or drawer. Dealers in bouquets have numbers of drawers lined with zinc in which they keep their flowers, mounted or otherwise; those who have shops must have such appliances as these, but it is not to be expected that amateurs will be furnished with them. If I want to keep a coat flower from one day to another, I place it in a common tin box with a tight-fitting lid, such as wafer biscuits are sold in, over the bottom of which is laid some wet Moss of the kind one gets in bundles at the flower shops, or finds in woods or on banks. I place the back of the bouquet next the Moss, and cover the stem over with some more wet Moss; I then sprinkle the flowers and Ferns well with water, and then shut down the lid, which is as air-tight as possible, and, treated thus, flowers and Ferns will keep fresh for days. If I want to send a bouquet by post, I put Moss enough in the box to raise the bouquet, when laid on it, nearly level with the lid when shut down; and across the face of the flowers I lay a piece of cotton wool, which keeps them from rubbing against the lid.

Coat flowers I like associated with fronds of Maiden-hair Ferns, that is if the flower is an indoor one, as what, for instance, looks so elegant with a *Gardenia* as a bit of *Adiantum cuneatum*, the bright green spray of which sets off white blossoms of all kinds to much advantage. The coat flower to which was awarded the second prize at the Birmingham show before-mentioned, consisted of a small spray of red *Combretum* backed with a frond of Maiden-hair. There are numbers of flowers suitable for such an arrangement as this, but care should be taken that such as are selected are good specimens of their respective kinds, and be a little shrouded in the Fern, as many coat flowers I have seen were quite spoiled by having only one spray of Fern, against which was laid the flower; the latter, under such circumstances looking hard and stiff. Now, had there been another small piece to fill up the space at the base, and a tiny bit drawn across the flower, the effect would have been much enhanced. This should always be done if the flower used is of a bright or glaring colour. I always like to see a Rose with a leaf belonging to itself behind it, and a few sprays of the young brown-coloured growth around it. Such an arrangement may seem easy to manage, but this is not the case, as the Rose-leaf must be wired, and that is one of the most difficult of all things to do properly. Take a Rose leaf, and lay it face downwards on a table. It will then represent a stem with two or three small leaflets on each side and one at the top. Down the centre of each of these small leaves or leaflets is a comparatively thick mid-rib, with slighter ones branching off from it. Take a piece of fine wire and pass it through the leaf (always selecting the top leaflet first), under one of these slight ribs, and bring it up on the opposite side of the ribs. Subject two or three of the ribs to this operation, always keeping close to the centre rib: in fact work as if you were sewing through the leaf, having the long stitches, if I may so call them, on the wrong side, and it will take great care and practice to keep them from being seen on the right side. The wire should be cut off at the top, so as not to let it appear above the point of the leaf. The other part should be drawn down the long stem, and given a twist here and there; but take care to keep the wire from being visible. The little side leaves should be done in the same manner, the only difference being that the wire is cut off at each end, and not brought down the long stem like the top one. To do all this well takes some little time and trouble; but a Rose leaf if not mounted as just described, is liable to get

out of shape, and to hang down; if wired, however, it keeps stiff and can be bent back and arranged according to fancy, just as one would adjust an artificial leaf. It has lately come into fashion for ladies to wear small bouquets in the front of their dresses or jackets. These are similar in every way to those just described, except that they are at least a full size larger; the directions therefore given for mounting ordinary button-hole bouquets, will suffice for those worn by ladies.

A. HASSARD.

A LIVING VASE.

THIS process of ornamenting vases is by no means new; but, as the thing is still far from being common, and as it may conduce to other analogous applications, we have deemed it worth while to give a representation of it so as to show the result, and to indicate the means employed to obtain it, which are most simple. Though any kind of vases can be used indiscriminately, those in unglazed terra-cotta are preferable, being porous. In such vessels the water with which the vase is filled percolates constantly through the sides and moistens the plants which are fixed on its surface. This kind of vase is, however, not indispensable, for we can ornament all kinds, whether in glass or metal. In the latter case it is necessary to prepare the surface so as to convert it into a sort of soil, which it



A Crop of Cress on a Vase.

really represents—an operation which is easily managed by the aid of a piece of cloth or flannel which is fixed by means of a little packthread or thin iron or brass wire. This being understood, the means employed to grow the seed must next be described. If a porous vase be used it is filled with water or, better still, left in a pail of water to soak. After the lapse of twenty-four hours, when the water has thoroughly saturated the vase, it is laid on its side, and the seed sprinkled slightly over the surface, taking care to turn the vase in different directions, in order that the whole surface may be well covered with seed. This operation terminated, the vase is placed in a dark closet for some time, and, if possible, under a glass frame, so as to preserve humidity and facilitate germination. When the plants are developed, and in case they get detached from the vase, they are secured by passing round, in different directions, a little packthread or fine wire, which soon disappears under the vegetation. If a non-porous vase, after having well soaked the cloth which covers it, the seed is sown upon it, and the same care is given it as has already been indicated. When a porous vase is used it should be kept constantly full, as it is the water filtering slowly through it that feeds the plants which cover the sides. If that be insufficient to ensure vigorous growth, the vase must be watered, taking care to pour the water cautiously, so as not to detach the plants. If glazed or metal vases be used, glass bottles for instance, they must be constantly watered; the water should be poured from the top over all, so that, in descending, it wets all parts of the cloth, which should always be damp. Whenever the plants droop they must be refreshed by watering them carefully. The vase should stand in a saucer or plate. The seeds used should be very fine, and especially light and of easy and quick germi-

nation. The common Garden Cress is most suitable from its great rapidity of growth, the easy and very quick germination of its seeds, and also on account of the little nourishment the plants require; but it has several drawbacks: first, it has a tendency to sink more or less, then to leave gaps, to show flowers very quickly, and then to wither away. The common Ryegrass is also suitable, but experiments with other seeds may be made. We ought to multiply and vary the experiments until satisfactory results are obtained. The following kinds of plants might prove suitable:—Crested Dog's-tail Grass, White Clover, Yellow Clover (*Medicago lupulina*), Flax, but particularly the Timothy Grass (*Phleum pratense*), which appears to be singularly appropriate for this mode of ornamentation.—E. A. CARRIERE, *Revue Horticole*.

THE ARBORETUM.

THE BEST CONIFERS FOR BRITAIN.

I HAVE read with interest "A. M.'s" article, in last week's GARDEN, on this subject, and I think it will be of great use to future planters. There is only one statement in it which is, I think, open to question, and that is that the Deodar will be a good substitute for the Larch. Within the last fourteen years we have had two frosts, that of 1860, which, to my own knowledge, destroyed many Deodars, and more or less injured all others in this neighbourhood; and that of 1867, which destroyed several Deodars at places that I could name in different parts of Surrey. I only name these two places as having come under my own experience, but I am convinced that the same thing has happened in other parts of England. I have not seen the Deodars at Riccarton for some years, but must own that when I did see them they did not look as if they had ever suffered or been retarded in growth by frost; but I cannot help fearing that some day or other a severe frost, coming, perhaps, after an exceptionally wet summer, may play the same havoc among them that has already been played amongst those in other parts of Britain. I must, therefore, beg to differ from "A. M." in thinking that a tree which has twice in the last fourteen years suffered so severely from frost can be recommended for planting on an extensive scale. The Douglas Fir, on the other hand, seems not only able to stand any amount of frost, but any amount of drought as well, as in a small mixed plantation of three years' growth, on a gravelly hill in this neighbourhood, it is now almost the only survivor of this almost unparalleled season of drought.

A NOTTS. READER.

RETINOSPORAS IN POTS AT KEW.

How is it these beautiful Conifers are not oftener met with than they are? Their scarcity cannot be attributed to their not succeeding in our fickle climate, for they seem as much at home with us as the Spruce or Silver Fir. They are, indeed, as hardy as a Stone Pine; they are the best of all Conifers for villa gardens; they need no house in which to grow them, much less pots. If I were asked why we do not find them growing abundantly in all gardens, I should be inclined to answer that we cannot expect people who see stunted, half-starved, deformed scrubby trees growing in huge costly glass buildings, such as the temperate house at Kew, to have the most remote idea of planting them out as hardy subjects, even should they be of an attractive character, which is more than can be said of the Retinosporas at Kew; nay, it is a gross injustice to this beautiful family of hardy Conifers to keep them in the plight in which I saw them there last spring. Surely, if Retinosporas are worth growing at all, they are worth growing well. If scarcity of room is pleaded, I would do away with a few plants of *Araucaria Bidwillii*, and one or two other things that so frequently crop up there. If Retinosporas really must be kept in this fine house at Kew, why not devote a bed to them in which they would grow and show themselves to advantage? Than such a bed nothing would be more admired, if we may judge from what we have seen when a good collection of them have been met with outdoors. But why grow them indoors at Kew? I have seen really well-grown specimens of them within 7 miles of the Marble Arch, and I have no doubt that they may have been observed elsewhere. I cannot say whether they will or will not grow well out in open quarters at Kew, for I saw none there thus situated. Granting that none are planted out there, may I ask why they are not? Who would think of planting Retinosporas after seeing those to which I refer? It may be said that grand specimens are not looked for at Kew; but surely graceful natural development ought to be found there as well as elsewhere. Many go to Kew to see what they would like to buy for their own gardens, and it can never be hoped that

Retinosporas, grown as they are there, can ever be selected for that purpose; whereas, if planted out-of-doors, and in a thriving condition, their beauty would at once arrest attention. JOHN TAYLOR.

Hardwicke Grange, Shrewsbury.

ON THINNING PLANTATIONS.

By ROBERT PHILIP.

THINNING is an operation in arboriculture subject to modification, according to the nature of the trees, or ultimate design of the plantation, to be operated upon. The same rules will not apply to Fir, hardwood, and mixed plantations; neither will they apply to an ornamental and profitable one alike. Few cultivators of trees in the present day will deny the necessity of thinning plantations composed entirely of hardwood or of hardwood and Firs; and fewer still will expect to rear a plantation composed of ornamental trees without due attention to timely and judicious thinning; but there are yet to be found parties in charge of plantations who believe (or affect to believe) that the best system of managing Fir woods is to allow them to thin themselves. The end and aim of all who thin trees ought to be to give those trees intended to fill the ground as the permanent crop the benefit of as much light and air around them as to keep them in a healthy and vigorous condition, light and a free circulation of air being indispensable for this purpose; and also not to permit more trees to occupy the soil than it is capable of maintaining. Trees, when crowded, are like cattle in a field where there are two for one which the pasture is capable of supporting in good condition; both may subsist in their half-starved state, but neither of them can be expected to come to anything like perfection. Some trees strike their roots downwards to a considerable depth in the soil, others keep them nearer the surface; but all draw what nourishment they derive from the earth, from the soil near the surface, or as deep in it only as the air can circulate; and, this being the case, they must have a reasonable space in which to extend their roots in quest of that nourishment. Where the soil is of that kind which prevents the roots from penetrating so deeply as their nature requires, it will not be capable of carrying so heavy a crop of timber; and to keep trees in a close state on such prevents them from rooting firmly, and also deprives them of their due nourishment. Trees, in such a condition, cannot be expected to remain healthy for any length of time, nor even to arrive at good dimensions. The too frequent practice has been, to leave twice the number of trees on such soil, from the very circumstance that they were not so robust and thriving as those on better soils; but we have no reason to expect that they should be so, although, were they thinned to a reasonable distance apart, it would very much improve them. By keeping trees rather thin than otherwise on such soil—which is always of poor quality—they arrive at larger dimensions, and live longer, although of rougher quality; thus affording both shelter and ornament. And, as in most extensive plantations there will be found spots of this kind of soil, it is of great advantage to have the whole extent filled with trees during the time the plantation is kept up. No universal rule can be laid down by any one for thinning, but general principles can be given sufficient for the guidance of those who want information. This will be evident, when we consider that few foresters are so far advanced in the sciences which demonstrate the quality of different soils so as to enable them to determine with certainty when and where trees ought to be thinned to a given distance apart. But every one can observe; and on careful and extensive observation we must rely until such time as we are better acquainted with the sciences referred to—geology, chemistry, and physiology, in particular. An accurate knowledge of these, and extensive observation, will qualify a forester to determine, with something approaching to certainty at least, what distance trees ought to stand apart in order to preserve them in perfect health, and to enable them to progress at the various steps in growth. Every district of country supplies lamentable evidence of thinning having been too long neglected, and, in many instances where it has been performed, it has been conducted on anything but rational, not to speak of scientific, principles. This state of matters is to be met with on the small property with a few acres of wood only, as well as on properties containing thousands of acres. In the first case there may be some excuse for the proprietor, as he has not extent enough to employ a properly qualified person, and must entrust the operations to a country carpenter, or more commonly to his overseer on the home farm, if he has one. These parties not knowing so much about the operation as the mere labourers under a forester of ordinary ability, it is no wonder that it should be ill performed. I have had frequent opportunities of examining plantations under such management. One, in particular, composed of Scotch Firs principally, with a very few Larch; these may have been about twenty-five years old, and in general healthy. It had been thinned by the land-steward, and the trees cut out and laid in lots for public auction. To my astonishment I found

that he had cut down the largest and straightest of the trees and left the smallest, bent, twisted ones, which had been rendered so by strong Whins and Broom having been allowed to rise with the young plants as the permanent crop. I found, on inquiry, that his reason for thus acting was because the bent trees would bring but a low price at the sale. Nothing can be more injurious to the future prosperity of a plantation than to thin for the purpose of making up a certain sum of money. Not a single tree ought to be cut, unless for the benefit of those left on the ground; as, if the plantation be properly managed, it is to the full crop, when matured, that the proprietor must look for the greatest profits of planting. There is, certainly, no reason why the thinnings should not be made the most of, keeping the general welfare of the plantation in view. Indeed, thinnings, under a good system of management, in many parts of the country, are a source of good profit; but the ultimate value of the crop, the maturity of the greatest quantity of clean, sound timber of good dimensions, ought to be steadily kept in view in every operation of thinning. I have said there is some excuse for the small proprietor, himself ignorant of the science, and entrusting the management of his plantations to persons more ignorant than himself. But I am perfectly satisfied that there is not only room for improvement on such properties, but that it can be carried out. Although foresters of ordinary ability are not agreed on forest management, still, with the knowledge which most of them possess who deserve the name, were there opinion taken on the spot by such gentlemen, they could give advice and instructions which would very much improve the state of things I have been describing. As to the proprietor of thousands of acres of woods and plantations, who has allowed them to be neglected and mismanaged, there can be no excuse, as the profit arising from such an extent of woods, well managed, would more than repay the employment of a forester of the best ability and skill in his profession. I have already stated that there is

No Universal Rule for Thinning.

A plantation composed entirely of Scotch Firs, planted on soil in every way suitable to their growth, requires to be kept thicker than any other kind of trees, in order to grow clean, useful timber; as the value of the Scotch Fir consists in this. From my own observation I am of opinion that the best rule which can be adopted in thinning Fir plantations is to keep the trees at such a distance from each other as to preserve the branches alive on one-half of the whole height of the tree, from the first thinning till the trees are forty years old, after which they ought to be allowed to assume their natural habit, which every one acquainted with the Scotch Fir knows to be a bare tall trunk, with a spreading top, small in proportion to the height of the tree when grown in its native forests. By the time they are from forty to forty-five years of age, if they have been well managed, they ought to stand so far apart as to require no more thinning. They will not, by the time they are the above age, be regular all over the ground, that is, they will not be any regular number of feet apart. Some may be a little too close for all arriving at maturity; but allowance must be made for a few dying during the remaining period they may occupy the ground, for were they thinned out to stand at something like 16 to 20 feet apart, then when one died a space twice as large would be made, and should two contiguous trees die a blank is made, and the wind makes havoc among the trees around. Scotch Firs, when so regulated during the time I have specified, will be found neither drawn up nor too tapering, but with girth of stem in proportion to their height. When they are so thinned that more than one-half of the whole height is covered with live branches, they are short in proportion to their girth near the ground; and, the branches getting too much space, grow large and produce coarse timber; but, when they are kept so close as to deprive them of living branches for much less than the above proportion, they get tall and drawn up, without sufficient strength of stem, and, when thinned, the wind waves them, and the one whips the other often to death, or renders them unhealthy for a time. I have had the charge of a plantation consisting chiefly of Scotch Firs, with a few Larches here and there through it, of about 600 acres, which was in a bad condition from being neglected too long. It was from fifteen to thirty-two years old, and large tracts of it had never been thinned up to the time it came under my charge. It has been very difficult to thin it, and it is not yet anything like what it ought to be for its age and height. My first object was to get all the dead and unhealthy trees, with a few of the overtopped ones, removed from those places which had never been thinned at all; then to go over the rest as fast as I could and give it a cautious thinning. I was not able for a number of years to get anything like regular periodical thinning performed, but directed my attention to the most necessitous parts. I have gone over it cautiously, generally every second year, and, except on the exposed sides and any rising ground, it promises yet to become a good plantation; but as it was so long neglected, and the

outsides had received rather a severe thinning, which unduly exposed the trees, one side in particular, where the soil is wet (although originally drained, the drains having been neglected), it will be impossible to recover. On the higher parts of the plantation, the trees having been kept so long in a close state, they have a very insufficient hold of the ground, and having slender stems for their height, with a very small proportion of top, they are liable to be blown down by every gale. On some of these parts it will also be impossible to keep sufficient trees for a full crop till they arrive at maturity. The only portion on which the trees have attained anything like the dimensions which their age and the nature of the soil would warrant us to expect is where lines of Larch and Scotch Fir had been planted alternately; the greater part of the Larches have been killed by disease, and the Scotch Firs, although too close in the lines, have had good space between them. Even here they are a very unequal crop. In addition to the regular thinnings, the whole extent of the plantation is gone over twice every year—in spring and autumn—and all the unhealthy trees cut down and disposed of. By this method there is a great saving; if they were left till dead the price would be from 2d. to 4d. per tree, while the labour of cutting and carrying out is nearly the same; whereas, before they die they bring from 6d. to 1s. 6d. each. A very great mistake has been committed in the management of Scotch Fir plantations, by keeping the trees too close on the outside of the plantation, from a fear of the wind breaking in upon it. On one of the sides of this plantation the trees are comparatively wide apart, and clad with healthy branches to near the ground; from this point the wind does very little damage, while on the other sides, where the trees are much closer, the damage is often great. When trees at the outside of a plantation are kept as wide apart as to allow their branches to be healthy from near the ground, they get a much firmer hold of the soil, and bring up strength of stem suited to their situation, and in this state they are healthier, and remain so for a longer period. I have been told that trees so managed will not defend the plantation against the storm, and that such a system of thinning the outsides will prove its ruin in course of time. But how comes it that trees standing singly in a park or hedge-row are seldom up-rooted by the storm? Nature adapts the growth of such trees to their circumstances; the free circulation of air through and round their tops causes them to throw out strong branches, and furnishes the tree with abundance of them. Clad with a large foliage, inhaling a quantity of the gases from the atmosphere, which give strength and stability to the plant, and the large space afforded for the ramification of the roots; these circumstances enable it to fix itself so firmly in the ground that no storm can uproot it. And, on the same principle will trees round the outsides of a plantation grow, and prove of more benefit as shelter to the interior than the unsightly bare poles too often to be met with in such situations. In order to have the outside trees of such a nature, it will be necessary, a year or two previous to thinning, to shorten the branches of those intended to be taken out, so as to allow those remaining to stand as close as possible, and not interfere with each other, or make too wide an opening. On the principle of keeping the trees close at the outsides, too many are left on the ground, and in such cases they are very insufficiently rooted, have little proportion of top, are more delicate in their constitution, and consequently more liable to die off, leaving blanks, which give the wind play amongst those left; from being top-heavy, of slender stem, and with roots confined within a narrow space, they get strained and loosened at the roots, which causes more deaths, and so the evil goes on increasing until the plantation becomes entirely a ruin long before the trees have reached that maturity which the soil and situation would warrant us to expect. Where narrow strips are planted, it must be for

Shelter and Ornament.

If rightly managed, to attain these two objects, it will be impossible to combine this mode of planting with clean valuable timber, the same as in a large plantation. Good dimensions may be obtained if the soil be suitable to the trees planted, but it will be of coarser quality. My opinion is, where narrow slips are planted they ought to be managed on the same principle as the outside of a large plantation. Nothing is more common, yet nothing can be more erroneous, than strips left so thickly planted, for the sake of the shelter they afford, that by the time they are from thirty to forty years old the trees are a parcel of mere poles, with all shelter and ornament gone for ever, so far as they are concerned; whereas, were the trees kept wider apart, there is no reason why they should not live and preserve shelter and ornament till they reach the natural age of their species, if suited to the soil and situation. No doubt the mismanagement of narrow slips has led writers almost universally to condemn them; and, certainly, where shelter, ornament, and clean timber of good dimensions are the objects of the planter, they ought justly to be condemned; but the first two may be attained where there is

breadth enough for three trees only; less than this should never be planted in the form of a strip, a single hedgerow will answer the purpose much better. As strips are generally planted on exposed situations, care must be taken not to unduly expose the trees, by severe or sudden thinning, to the storm; this would render them unhealthy and difficult to raise above mere bushes. If it be a mixture of hardwood and Firs, and it is designed to keep these as the permanent crop, no better one can be chosen amongst the Firs than the Silver; it is evergreen, attains good dimensions, and, where it is allowed plenty of space, retains its branches from the base, and the thinning should be so arranged as to encourage it. As to

Mixed Plantations.

those composed of hardwood and Firs, or, let us say, those composed of a mixture of the Firs only, are not so easily managed as when each kind is grown separately in masses, Larch, Spruce, and Silver Fir, all being of the same habit of growth, can be grown intermixed with advantage, so far as thinning is concerned, as they all require more space in their earlier stages to develop themselves properly than the Scotch Fir; but it becomes a difficult matter to thin properly, to suit the growth of the Scotch Fir, and that of the others in the same plantation. Larch, Spruce, and Silver Fir will require to be so thinned as to allow them to retain their branches on three-fourths of their whole height during the entire period of their growth, whilst the Scotch Fir, as I have already stated, requires the branches preserved on one-half of its height to keep it in vigour and to make clean timber, and that proportion for one-half of the period of its growth only. I do not mean to assert that these proportions of top can be always exactly preserved, but the nearer they can be approached the better. I do not lay down rules to be implicitly followed under all circumstances, but merely give my own opinion, as formed from careful observation and experience in the district from which I now write. Some writers give the number of feet apart at which trees ought to stand at certain stages of their growth, and the number of thinnings they require. This I think a rule which will not be found applicable in all cases where it is recommended, as the soil, climate, and situation will necessitate a plantation of the same nature to be differently managed. I have found it necessary to thin a plantation this season which has been planted six years only. It is composed of a large mixture of hardwood, with Larch, Spruce, and Silver Fir for nurses. The Larches are 9 to 11 feet high, and 2 to 3 inches in diameter at the ground; the Silver Fir and Spruce from 3 to 4 feet high; the hardwood, 3 to 6 feet high. Besides taking out a number of the Larches, I found it necessary to shorten the branches of many of them which were interfering with plants not so far advanced. There is another plantation on this estate, consisting of Oak, Ash, Elm, Sycamore, with Larch, Spruce, and Silver Fir, as nurses, which will not be ready for thinning for three or four years, although planted at the same time as the last. The first was formed on ground which had been under agricultural crops, and the plants put into the ground after a crop of Turnips; the ground kept clean of weeds for three years. The soil is a damp rough clay. The second plantation mentioned was formed on ground which had previously produced a crop of matured Scotch Fir, and was planted three years after it was cut down; the plants here have done remarkably well, but are not so far advanced as those in the first-mentioned. The soil is poor—gravely-clay in some parts, and in others a few inches of moorish soil resting on a hard tilly sub-soil. The most of this plantation was drained 2 feet deep, and from 9 to 12 yards apart. Besides the last-named, there is a plantation of Fir, which I found it necessary to thin for the first time when about fourteen years old; another Fir plantation on the estate I have just thinned for the first time, which has been planted eighteen years, but I must confess it was in want of thinning three years before I could get at it. So much for the time to commence thinning, when planted from 3 to 4 feet apart. If it be intended to leave the hardwood trees as the permanent crop, using the Firs as nurses only, it will be necessary, previous to any thinning, to go carefully over the whole extent of the plantation and shorten any branches of the Firs which may be found interfering with, or over-topping the hardwood. This is a work which takes up but little time, and is of great service to the young plants, as it can be done when the hardwood is pruned, by merely going through with a hedgebill and shortening where necessary. Hardwood being more inclined to spread out in large branches, and less inclined naturally to rise with a central stem than the Fir tribe, requires great attention to thinning and pruning, so as to have the nurses cut away gradually; taking care that the trees bring up strength of stem proportionate to their height. Many a good plantation of hardwood is spoiled by neglecting to thin in time, the Firs having been allowed to stand so close that any hardwood trees which had not been choked and killed are seen rising to such a height with a weak stem, that, when the Firs are cut away, they cannot support themselves. And even although they should be as strong of stem as to support them-

selves, with the assistance of a little pruning, which such trees will always require to balance their tops, still they will be unduly exposed and liable to fall into bad health, and even die. Some of the hardwood, such as the Sycamore and the Ash, if once rendered unhealthy, are difficult again to restore to health; the Oak and the Elm are more easily recovered if they are not too far gone. Much shortening of the side branches of the nurses will be necessary in exposed situations before they are entirely cut away to preserve shelter to the plants intended as the permanent crop; but, where the situation is naturally sheltered, they will require less shortening, and can be sooner cut away. I consider that by the time the plantation is twenty years old in the exposed and fifteen years in sheltered situations, the nurses ought to be all removed. Where a mixed plantation of hardwood and Firs is wanted, Spruce, Silver Fir, and Larch ought to be kept; as, where hardwood will grow to ordinary dimensions, these trees will be found to answer best—the Spruce on the dampest parts, Larch where the soil is damp but not wet, and the Silver Fir on the driest parts of the soil. Scotch Firs should never be left among hardwood as a permanent crop, unless where the soil is of a very poor quality; for, although of a conical habit when young and in a close state, yet where it gets as much space as hardwood requires, it is very apt to grow rough and branchy, and the timber of little value. Nor is it so well adapted to preserve shelter as the others mentioned, which keep their branches alive on a larger proportion of their height, and are still valuable as timber. But in thinning a plantation of mixed trees, those which appear to thrive best on the soil ought in all cases to be encouraged, and left as the permanent crop; for, where there is a great variety of trees, all will not be found to thrive alike; and on no account should they be thinned and pruned the same year, such a course exposes them too much at once, and should be carefully guarded against at all times. Such thinning, instead of proving an advantage, will be found the very reverse; as the general temperature of the plantation is cooled too much at once, and the trees, instead of improving by the operation, will stand still for the first year at least; and, if the situation is exposed, for several years they will make little progress. As I have already stated, space enough to

Permit Light and a Free Circulation of Air

amongst the trees, and no more, is, without doubt, the condition under which they will thrive and grow most profitably; more than that will only induce the side branches to grow strong, which robs the main stem of its due nourishment, and produces coarse timber, or causes additional work to the pruner to keep these branches within due limits. Amongst trees of whatever species there will always be found some of coarser growth than the rest; these have a natural inclination to grow strong in their branches, and should be all cut out, if possible, in the course of thinning; for there can be no doubt the smaller the branches the cleaner the timber will be. I purposely abstain from giving the number of trees to be thinned out at any given stage or condition of a plantation. Some writers give rules for thinning so exactly, that the number of thinnings is stated, as also the number of trees to be thinned out at each operation, and the number left as the permanent crop. It is comparatively easy for any one—even a mere theorist, to sit at his desk and draw out rules for thinning; but when we would reduce these rules to practice they will often be found impracticable. Although general principles can be given, which may help to guide the inexperienced, mathematical rules cannot; not even by the most experienced practical men—far less by the mere theorist, who has had little or no experience. Theory and practice combined are what we wish to see more extensively brought to bear on all the operations in the cultivation of trees, but theory made subservient to practical experience, and practice divested of all old preconceived notions and prejudices—then, and not till then, may we reasonably expect to see improvement in arboriculture. No specified time for thinning a plantation can be positively stated, the general health and progress which it may have made since last thinned must, in a great measure, determine when it requires the assistance of the hand of man. Some years will prove more favourable to the growth of the Fir tribe, and others to the growth of hardwood trees, and should a few years succeed each other favourable to either, a plantation may want thinning as much in three years as it would in five not so favourable. Altitude and soil have also much to do in the progress of a plantation; where altitude is great and the soil poor, the trees cannot be expected to make the same progress as when they are on low ground and good soil. The thinning operations must be performed in a neat and careful manner by the workman, and the work conducted in as profitable and economical a way as possible. Where the trees are young, and not more than 6 or under 6 inches diameter at the root, it will be cheapest to cut them down with the axe, and the workman should be made to cut them over as nearly level with the surface as possible; if Heath or rank Grass grows round them, it should be pushed down with the

head of the axe in order to get them cut low. All trees above 6 inches should be cut with the saw, if they are suitable for sawing purposes. If the wood is cut and laid out in lots for public sale, it will always be found that the more the buyer's interest is studied the better a price will be got for the wood; for much depends on the way in which the trees are laid out to public view, as people at a sale have but little time to judge of the value of each lot, and have often but a mere glance at it. All trees of any size ought to be seen at once, and the different sizes all put in separate lots; nor should hardwood and Fir be put in the same lot; but, if possible, keep each kind separate. And another point to be attended to is to have at least one good cart-load in each lot, a large number of small worthless lots always have a prejudicial effect upon a sale; it takes up time to no purpose, and the purchasers get out of humour. The trees, when cut down, ought to be all carried; or, if too heavy for carrying on men's shoulders, dragged out to the nearest road leading out of the plantation. Dragging out trees is dangerous to those left standing, if great care be not taken, as it often damages the bark on the bare roots and lower part of the trunk. Where the wood is very heavy, and not on steep ground, it may also be carried out to the road by a junker; and this is not so injurious to the roots of the standing trees as dragging. All trees should be conveyed out of the wood whole, if possible, as cutting may spoil them for a particular purpose for which they may be wanted by some of the purchasers; and all branches dressed off the trees must be carried out and laid in lots, and sold along with the trees, if a sale for such can be got. Nothing looks more trashy than tops and branches lying about in the woods, and such rubbish encourages vermin and insects injurious to the growing trees. The decay of such rubbish by the gases arising from it also proves detrimental to the health of trees, especially if the plantation be composed of one kind only; but if it be a mixed plantation, the decay of refuse will prove beneficial, as such refuse of hardwood proves a natural manure to the Fir tribe, and *vice versa*. Objections may be raised on the score of expense in taking out all this rubbish, in coal and peat districts where fire-wood will not sell at any price; but although it should have to be burnt on the ground, I am prepared to assert that the better health of the plantation will repay all expenses; and where fuel is scarce, it not only refunds the outlay, but it will leave a good profit. Where the trees are of considerable size, either Fir or hardwood, great care is necessary in thinning to prevent the falling trees from injuring those left on the ground; where there is not plenty of space for them to fall, their tops should be lightened, and in some cases entirely cut off. This operation is performed by a man ascending the trees with a hand-saw, and commencing at the first branches, cutting the whole off till he arrives at the top; he then cuts off as much of it as is safe and convenient, by holding the saw in a slanting direction towards the root of the tree, and in an opposite direction from himself; this is the only dangerous part of the operation, and the man must keep a firm hold while the top falls, as the swing given to the tree may throw him off his balance. If the trees be much off the perpendicular, and leaning to any great extent to one side, in order to make them

Fall where they will do no Damage,

the man should almost always be furnished with a strong rope, and a large hook fixed to it, with a socket to fix it on the end of a pole; the pole may be from 20 to 35 feet long, according to the height of the tree to be cut, and fixing the hook on the end of it, it is pushed up through the branches, and hooked on to a strong one, and the tree made to fall in any direction wanted. By this pole much time is saved in climbing to fix the rope to the tree. When thinning on the home grounds, all trees should be cut as low as possible, for nothing looks worse than high stools, and, indeed, this ought to be attended to in all plantations, as they are not only unsightly, but become a great annoyance in carting or taking out the thinnings at all after times. The proprietor's forester, or a responsible person for him, should superintend all thinnings of plantations, and on no account allow the parties who purchase the wood to cut it for themselves; they are careless as to how they perform the work, provided they can do it cheaply for themselves, and many of the standing trees may be ruined by their carelessness. Much damage is often done to the growing trees by parties removing the wood from plantations, by knocking against them. The forester, or person superintending, should look well after this, and check it, as every piece of bark removed from any growing trees makes a blemish in the timber, and is injurious to its health. The expense of thinning will very much depend on the nature of the ground on which the plantation stands, and the price of labour in the district; the profits arising from the operation will depend on the way in which it is performed, and the price of thinnings in the market. But if the operation is judiciously performed, the health and progress of the plantation will amply repay all outlay on it; and the money-profit at the time ought to be

but a secondary consideration with those who wish to raise timber to good size, and retain a full crop on the ground. We trust the time is not far distant when thinning will be better attended to by proprietors of plantations, and the country no longer disgraced by a system of management which would induce the belief on the part of planters that no further care is necessary after planting but to receive the produce of their woods as a gift from Nature.—*Transactions of the Scottish Arboricultural Society.*

Daphne Fortunei.—This was sent to the Royal Horticultural Society by Mr. Fortune, from the Chusan Hills, Ningpo, and Shanghai. It is a small downy-branched bush, with thin deciduous opposite and alternate ovate-oblong leaves, covered with very soft fine hairs. The flowers, which generally appear very early in spring, are pale bluish-lilac, arranged in clusters of four, upon branches scarcely beginning to put forth their leaves. They are rather more than an inch long, covered externally with soft closely pressed hairs, and divided in the border into four roundish, oblong, obtuse, uneven lobes, of which the two inner ones are the smallest. In the inside of the tube of the calyx are eight nearly sessile stamens in two rows, with narrow sharp-pointed anthers. The ovary is smooth, stalked, one-celled, with a small fleshy scale at its base, and a single suspended ovule; it produces abruptly from its summit a very short cylindrical style, ended by a capitate hairy stigma. No species yet described, approaches very nearly to this, which has been named after its enterprising discoverer; the seed being unknown, it can only be conjectured that it belongs to the *Mezereum* [division of the genus. It is a greenhouse or, perhaps, half-hardy shrub, and is a charming addition to this class of plants, more especially since it appears to be well adapted for forcing.

Seaside Trees and Shrubs.—*Abies Menziesii*, *A. nobilis*, and *A. orientalis*, *Acer creticum* and *A. monspessulanum*, *Arcauria imbricata*, *Arbutus* (most of the species), *Atriplex Halimus*, *Aucuba japonica*, *Baccharis halimifolia*, *Buddlea globosa*, *Bupleurum fruticosum*, *Buxus* (all the species), *Camellia japonica*, *Chamaerops humilis*, *Chenopodium fruticosum*, *Cineraria maritima*, *Colutea arborescens*, *Daphne Cneorum* and *D. pontica*, *Desfontainea spinosa*, *Elmagnus* (most species), *Escallonia* (all the species), *Eucalyptus* all the evergreen species), *Ficus carica*, *Garrya elliptica*, *Griselinia littoralis*, *Halimodendron argenteum*, *Hippoboscus rhamnoides*, *Hydrangea Hortensis*, *Ilex* (Holly) (all the species), *Lardizabala biter-nata*, *Laurus nobilis*, *Lavandula Spica*, *Leptospermum lanigerum*, *Ligustrum* (the evergreen species), *Lycium europæum*, *Myricaria germanica*, *Myrtus communis*, *Olea ilicifolia*, *Osmanthus ilicifolius*, *Pernettya* (all the species), *Phillyrea* (all the species), *Pinus macrocarpa*, *P. pinaster*, and *P. Sabiniana*, *Pyrus salicifolia*, *Quercus Ilex* and *Q. Suber*, *Raphiolepis ovata*, *Rhamnus alaternus*, *Ruta graveolens*, *Santolina Chamaecyparissus*, *Shepherdia argentea*, *Tamarix gallica*, *Veronica Andersoni*, *V. decussata*, and *V. salicifolia*, *Yucca* (all the species), and *Zenobia speciosa pulverulenta*.—A. MONGREDIEN.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Chokeberry (*Pyrus arbutifolia*).—Can you tell me if this is the same as what is called the Choke-cherry in Canada? Also, if the latter ever bears fruit in this country? I have two trees of it which I brought from Canada in 1863, and though they flower annually, they have never set their fruit. The fruits are small and many on a stalk, resembling a bunch of Grapes, and the leaves, like the wild Cherry, turn red.—J. H. W. THOMAS, Belmont, Carlisle, Ireland.

Autumnal Tints of the Aspen (*Populus tremula*).—Your correspondent "E. P.," who writes from Braemar (p. 328) of the beauty of the foliage of this Aspen, must have finer examples of it there than have come under my notice. Here it is of a dark-green colour, without the slightest tint of crimson. Can you ascertain from "E. P." the nature of the soil on which it grows at Braemar, as we know that soil does occasionally alter the tints of leaves?—JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

The Venetian Sumach (*Rhus Cotinus*).—This is very handsome, in the form of a single specimen on Grass. In fact, those who have only seen it confined in shrubberies can form but little idea of the beauty of a well-grown plant of it in a good position. Its large bunches of downy pink inflorescence are produced in such abundance as to effectually conceal the foliage, and give the tree, at a short distance off, the appearance of a huge mass of delicately-tinted swan's-down. It also lasts in perfection for a long time, and the fact of its coming in as it does, after the majority of flowering shrubs are over, renders it all the more valuable, and well worth a place in the most unique collections of hardy shrubs.—JAMES GROOM, Henham Hall, Suffolk.

Remarkable Conifers at Beauport.—We are indebted to Mr. Faunce De Laune, of Sharnsted Court, for the following:—I measured, he says, the Wellingtonia in Beauport Park, Sussex (Sir A. Lamb's), and found the stem to be 9 feet 10 inches in girth on the ground; at 3 feet, 6 feet 9 inches; at 5 feet, 6 feet. It measured about 90 feet round the branches on the ground, and I should say, although I could not measure it, that the height is between 50 and 60 feet. The size of an upright variety of *Cupressus macrocarpa* was as follows:—Circumference of stem on the ground, 9 feet 4 inches; at 3 feet, 7 feet 2 inches; and at 5 feet, 6 feet 6 inches. *C. macrocarpa*, with a flat top, had a circumference of stem, at 4 feet from the ground, of 6 feet; at 3 feet, 6 feet 3 inches; diameter of branches, 28 feet. There are numerous other fine examples of *C. macrocarpa*, and some grand *Aracarias* and *Pinus insignis*.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Kitchen Garden.

A HOT-BED may now be made up for forcing Asparagus. Where leaves can be readily obtained in quantity to mix with the stable-dung, the fermentation and preparation of the materials will involve less labour than would otherwise be the case; and there will be less danger from over-heating. In forcing Asparagus, a strong heat is not required; it would, in fact, be injurious. If a temperature higher than 60° is maintained, for any length of time, the heads will come up weakly and poor. What is required is a mild genial bottom-heat, such is usually furnished by stable-dung and leaves, employed in about equal proportions, well mixed and shaken together, and built up about 3 feet high at back, and 2 feet in front. I have often forced Asparagus where the heating power was furnished by means of hot-water pipes; but, on the whole, I much prefer the genial moist heat obtained from fermenting materials. When the bed is finished and the frame placed on it, a test stick should be pushed into its centre, to indicate when the roots may be safely planted, but if the bed has been properly constructed, it should be in a suitable condition in about a week or so after having been put up. The bed inside the frame should be levelled, and about 2 inches in depth of old tan or leaf-mould should be placed on it. The roots should then be carefully taken up and placed closely together all over the frame, finally covering with about 3 inches of fine light rich soil. Where white Asparagus is desired a greater depth of soil will be necessary; but the flavour of green Asparagus is superior to that of white. When Asparagus is forced in this way it does not require much water, as, with the exception of one watering with tepid water to settle the soil when the roots are first introduced, the moisture arising from the decomposing manure will be sufficient to keep the bed in a healthy condition. Cover with mats on cold nights; or, when necessary to keep up a regular temperature, and give air freely when the young heads push through the soil, to flavour and strengthen them. The above, I believe, is the best plan for forcing early Asparagus, but it involves the destruction of the roots, and, therefore, a constant succession of fresh plants should be annually brought forward to keep up the stock. A new bed should be filled about every three weeks if a large and constant supply is required. After Christmas, when the days lengthen, some arrangement might be made by which some of the permanent beds might be forced; the produce from these would be finer and better than that from frames, and no serious injury need be done to the beds, i.e., if they have not been too much exhausted by too much cutting. Take advantage of fine dry days to take up such crops as Carrots, Salsafy, Scorzonera, and Beet. Parsnips keep best in the ground, and a part of the Salsafy and Scorzonera will also be better left in the ground till after Christmas than lifted now. Beet should be handled with special care, for, if cut, bruised, or otherwise injured, the roots will not keep, and the colour and flavour will be spoiled. A considerable portion of the crop of roots will keep best if clumped in the open air (but not in large heaps), covered with straw, and by-and-bye a thin covering of soil should be added and beaten smooth with the spade to throw off wet. A sufficient quantity for present use might be placed in a dry cool cellar or shed. Pot a few roots of Chicory and place them in the Mushroom-house; it will be a valuable help to winter salads if a succession is kept up. Endive will now require considerable attention to have it in good condition; tie up a few plants every dry day, and cover them with pans or something to throw off rain; for, if exposed to damp, they soon decay. Have a sufficient stock of it in some position where it can be easily sheltered from frost. French breakfast and black Spanish Radishes may yet be sown on a warm south border; the former kind turns in very quickly.—E. HOBDAV, Ramsey Abbey, Hunts.

Hardy Fruit.

As soon as the leaves of early Cherries and Plums begin to fall, proceed with the pruning and nailing of wall trees. This is alike humane and economical, for a man will do ten times more work on a wall-side, in early autumn, than in mid-winter, and also do it better. Fruit trees, too, do not suffer from early pruning and training; but, on the contrary, bear close pruning well; and Plums especially bear and look best treated somewhat on the principle of Morello Cherries—that is, pruned and trained so as to bear largely on the young wood. By such means the trees are kept closer to the wall, and partially renew their growth every year. Cherries may also be treated in the same manner, though all the large fruiting varieties bear close spurring for many years better than Plums. Old trees, too, very often bear their spurs close cut, not only without injury but with positive benefit to their continuous fertility. By

studying the characteristics of spurs, the skilful pruner will generally find some buds near their base that may be cut back to with impunity. Of course, no one would think of removing all the more prominent spurs at once, unless he could afford to lose a crop; but, by cutting a few of the largest out annually, they may be kept within a reasonable distance of the wall, and the form and beauty of the tree, as well as its constant fertility be preserved. Again, in the laying in of young wood, we find the means of dispensing with the old in due season, as the great art of successful pruning is to prune for a crop, so as to renew the growth, and so add to the strength and vigour of the tree. There is yet one more advantage in early pruning. The wounds made now heal faster and sounder than those made later or inflicted in the spring. These are points of immense importance to the future well-being of the tree. Bad heals, if I may so call them, constitute the most fruitful sources of disease and death. No larger wounds than are absolutely necessary, should be, in fact, the motto of all skilful pruners, who should also cut in such manner and at such a time, as to ensure speedy healing over. Smoothness and a short angle from the lower to the upper side of the cut, so that no moisture can rest on the wound, is one of the surest methods of helping it to heal over rapidly. A cut with a ragged edge, jagged surface, and wounded bark, will hardly heal at all. Cuts made in frosty weather are more like breaks than new smooth wounds. Whatever appearance the surface may present, the tissues are bruised and wrenched asunder; and this, as well as the effect of the cold on a raw wound, is the cause of most of the evils arising from pruning during hard frost. By pruning hardy trees now, the wounds become healed over before the cold weather sets in.—D. T. FISH.

Indoor Fruit Department.

Pot Vines placed in heat about the first of the month will be showing as yet but little signs of growth; do not, however, increase the temperature in order to force them on more rapidly, for the slower they start at first the stronger will be their growth. If a slight acceleration is required, it should be after the bunches are formed and the berries are set. Be careful not to over-water; at present the soil should be kept rather dry than wet, there being as yet little root action. When water is given it should never be colder than the bottom-heat in which the plants are plunged, or the soil in the pots. If this be 75° the water should be 80°. Chills in all forms must be avoided; young Vines which were propagated from eyes in the spring, and grown on in pots throughout the summer for planting next spring, should now have ripened their wood. Those fully matured should be wintered in a cool airy house. An open shed, covered at top, answers very well for this purpose. The canes of the Muscat take longer to ripen; these, and any other sort not yet brown to the extreme points, should be retained in heat until they acquire that condition. It is a mistake to move Vines from a warm house to a cold situation before they are thoroughly ripe. In such a case they are starved into rest in a way that is never productive of good results. Here we have annually many thousands of young Vines both for fruiting in pots and for planting out. They are struck from eyes early in the season, and as soon as roots enough have been formed to provide sufficient support they are set on a hard concrete floor and grown on rapidly, till, by the month of July, they are fully developed; ripening then begins, and already they have shed their foliage, have prominent eyes, and are hard and brown to the very points. This is a trying period for Grapes still hanging on the Vines. Heavy rains and muggy atmospheres are not easily contended with, especially when there is much foliage to keep up a circulation of sap. It is under such circumstances that the advantages of protecting the borders are fully shown. If the wood of these is not yet ripe lose no time in effecting this desirable end; husband sun-heat for the purpose rather than keep up strong fires, the effect of the latter being to shrivel the fruit. Cuttings of Geraniums, propagated in autumn, and similar plants, have often, through necessity, to be wintered in Vineries, but their presence in houses containing ripe Grapes, is often most disastrous. Vineries in which the fruit has been cut should alone be used for such a purpose. Pines of the Queen variety intended for early starting and fruiting, should now, as a rule, be perfectly at rest; see that the temperature does not exceed 50°; for, if not allowed to exceed that, they will start into fruit with greater certainty when a higher temperature is applied to them. Between 300 and 400 Queens now being treated as an early batch here, have received no water at the root for three weeks, and if they do not absolutely require it, they will not get any for another three or four weeks more. See that the soil in which newly-rooted suckers are grown, does not get into bad condition. The bottom-heat for such stock may now be reduced 10°, too much growth being undesirable at present; slow substantial firm growth is what is needed to brave the winter season successfully. Bear in mind that

too much water at any time is as injurious as too little.—J. MUIR, Clovenfords.

Orchard House.

It is now time to refresh orchard-house trees in pots; the summer soil in which the trees have been feeding will be quite exhausted, and should be taken out of the pot about half-way down; more or less, it will probably be full of fibres. Care must be taken to preserve the main roots as much as possible, but the rootlets with which the soil is crowded may be removed; they have done their duty and are now useless; when the pot is cleared, fill in with the new soil, ram it well down with a wooden pestle, give a good soaking of water, and the tree will be ready to do its duty again next year. The soil should have been prepared at least six months since (a year is better), and should consist of good turfy loam mixed with about one-third of its bulk of rotten dung, and ought to have been turned over three times since it was deposited; if the natural soil is deficient in lime it should be added in the shape of old lime rubbish or, failing that, chalk. Place the trees in their winter quarters for facility of protection in very severe weather, and during dry sunny weather give water about three times a week. The open space which will be made in the orchard-house may be filled up with evergreens in pots. The best implement to pick out the soil in the pots is an iron rod about an inch-and-a-half in circumference and 9 inches long, the handle being 5 inches; for scraping out the soil use a small pair of claws, made as in the accompanying little illustration.—R.



Indoor Plant Department.

In conservatories, the earliest Cyclamens, autumn-flowering Heaths, forced Camellias, tree Carnations, Oleanders, Begonia Weltoniensis, Cassia laevigata, Gypripedium insigne, and a few other cool-house Orchids, young Chorozemas, Tremandras, Hedaroma fuchsoides, Lasiandra macrantha, and a few other plants, keep our conservatories at present gay with flowers. Fuchsias, a few Acacias, Plumbago capensis, and some Roses planted out in borders still continue to bloom admirably. Some of the taller-growing Chrysanthemums should now be taken indoors and placed amongst the Camellias, Rhododendrons, &c., in the beds. The dwarfed ones should be set on the side stages; but, where there is convenience, such plants should be kept in separate houses until they begin to bloom. If the tops of some of the shoots with flower-buds on them are taken off, and rooted, they will form nice bushy small plants, which will come into bloom before Christmas. Plants of tree Mignonette should be trained up to neat stakes, at the top of which should be fixed trellises for them to be trained over. Some Carnations should be potted so as to come into bloom a little later in the season than the others. Berry-bearing Solanums form attractive features in cool-houses. Some of their fruits are beautifully coloured, whilst on other plants they are still in a very young state. Skimmia japonica, now laden with fruit, planted along the front borders of conservatories in the natural style, is exceedingly attractive. Plants of Everlastings should be kept in airy houses; they should never be put outside during summer, nor forced in bloom. Show Pelargoniums will be breaking freely. Those required for early blooming should be re-potted, some into larger pots, and others into the same sized ones. Those, however, that are only intended for late blooming should still remain in the old pots. But the plants should be elevated, so as to be near the glass. Young plants in stoves still in active growth should be well watered and kept in the warmer corners. Washing leaves and cleaning plants from insects ought still to be the chief operation in this department. Euphorbia jacquiniiflora and Poinsettia pulcherrima should be kept as near the glass as possible. Young plants of these should be plunged in bottom-heat near the glass, so as to induce good crowns. Gesneras are now becoming attractive; those that have come fully into bloom should be kept a little dry, but those that have not opened their blooms should be supplied with a little weak manure-water. Caladiums should now be gradually dried off. Achimenes and Gloxinias that have done blooming may be stored under stages and on side shelves to dry. Let Dipladenias, Clerodendrons, Stephanotis, and Allamandas be loosened from the trellises on which they have been trained, and attached loosely to cords placed near the glass. In this way they ripen their wood better than in any other. They enjoy a tolerably warm temperature and a moderate, though decreasing, supply of water. Ixoras, which still continue to bloom, may be shifted into larger pots or shaken out of those they occupy; in the latter case their roots should be reduced, and they should be again re-potted into similarly-sized pots. Newly-potted plants must be encouraged in growth by being plunged in a brisk bottom-heat. Climbers that are obscuring the light from plants underneath them should be thinned out, and thoroughly cleared from dust and insects.

Flower Garden and Pleasure Grounds.

Between cold and damp, and the injurious effects of the slight frosts which have already been experienced, the beauty of our flower gardens may now be said to have, in a great measure, departed; and watching the gradual, but sure decay of the cherished plots of flowers, however seasonable and suggestive it may be, cannot be considered as the most pleasing of contemplations; where, however, a system of spring bedding is intended, no interregnum should be permitted, and the flower beds must be planted again as soon as possible. It may be taken for granted that all summer bedding plants intended to be preserved are, by this time, potted up and placed in their winter quarters; while the remainder should be cleared away, and the soil of the beds, after the necessary preparation, should receive at once a stock of spring-flowering hardy herbaceous plants of various sorts, early flowering bulbs, &c., such as have already been enumerated in previous calendars, together with dwarf berry-bearing and ornamental foliaged shrubs of various kinds, such as variegated Yews and Hollies, Aucubas, Retinosporas, Euonymus of sorts, Skimmia japonica, green and variegated Ives, &c. Spring bedding necessarily differs materially from that of the summer season, and a simultaneous and gorgeous floral display is not to be expected, nor is it to be desired. The quiet beauty of early spring flowers is more calculated to call forth love and affection than to excite admiration and surprise; it is, therefore, seldom advisable to adhere so closely to the grouping system as is generally done in carrying out a system of summer bedding. Possibly the most satisfactory method to pursue, in furnishing flower-beds and borders at the present season, is to use for the purpose a judicious combination of spring-flowering bulbs, early flowering hardy herbaceous plants, and annuals, with dwarf ornamental shrubs of various kinds, by the aid of which an immediate effect is produced, and which will be increased, as the season advances, by the gradual development of the early flowering plants and bulbs. As soon as the planting of all beds and borders has been completed, let everything connected with the flower garden be again put into proper order. Lawns and Grass belts, should all be mown, for possibly the last time this season; leaves should be swept up, and gravel walks cleaned and rolled; and, when all this has been accomplished, attention should at once be turned to any alterations which may be contemplated, and which may necessarily involve the removal and transplantation of trees and shrubs, the planting of Box or other edgings, and the re-laying of turf, &c. The present time is unquestionably the best during the year for accomplishing such work, as there is yet ample time to allow turf to become established, and trees and shrubs, which have been moved, to put forth fresh roots, and to some extent establish themselves in their new situations before the ice king is likely to paralyse for a time, all such efforts. Whenever the weather is mild, give abundance of air to rooted cuttings of bedding plants, which should also be frequently examined and all dead and decaying leaves, &c., at once removed; giving water sparingly, and never until the soil is somewhat dry. If not already done, cuttings of bedding Calceolarias may now be inserted, placing the pots or pans containing them in cold pits or frames, and keeping them in a close atmosphere for a time; and as free from drip as possible. When fairly rooted give air during mild weather, and water when required, and the protection of mats, or other covering, during severe frost. —P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

The season for selecting positions for new Rose-beds, and for laying out new Rosaries has arrived. In the first place, such situations should be well drained; remove the surface soil and take out the sub-soil (i.e., if it is stiff clay or gravel) to a depth of about 2 feet; procure some good loam or fresh turfy soil and mix it with the surface mould, working into it plenty of good stable-manure, and with this compost fill the beds, leaving them slightly rounded in order that rain-water in winter may not stand on the surface. In the case of sandy or gravelly soils, where the surface is very light, it is advisable to mix with it a little clay, for I find that the Briar stock does best in a heavy soil. In districts in which there is a good depth of loam, all that is necessary is to trench it 2 feet deep, and to work into it plenty of manure. In this, Roses will succeed satisfactorily. Whatever may be the character of the ground it is best to have it ready for the plants a fortnight or three weeks before planting. As regards pot Roses, take all required for early and late forcing into cold pits, or plunge them in some sheltered spot out-of-doors, where, if possible, rain and frost will have little effect on them, for, if allowed to get saturated with water, and frost sets in, it will kill most of the tender varieties. Where autumn-blooming Roses can be afforded a slight covering on frosty nights they will continue to bloom much longer than they otherwise would do. Cuttings may now be put in of some of the

free-growing varieties, either out-of-doors or in pots set in cold pits.—F. G.

Trees and Shrubs.

Besides evergreens, mostly all the Pine tribe are fit for planting out this month, and planting of two-year seedling or bedded Scotch Firs into nursery rows may be done advantageously. Prepare ground for young plantations, draining, fencing, and making pits for the plants. Gather tree seeds; the following, amongst others, should be ripe this month, and are best sown as soon as possible after being gathered—viz., Horse and Spanish Chestnuts, Walnuts, and Oaks. Kinds that would suffer from spring frosts, such as Beech, Maples, &c., should be kept till sowing time in February or March. Thorn, Beech, and Privet hedges may now be planted advantageously.—D. S.

Bouquet Flowers in Season.

Our flower markets now contain a good supply of cut flowers for all purposes of decoration, from the tiny button-hole bouquet to the large centre piece for the adornment of the dinner-table; amongst other varieties obtainable may be enumerated the following:—Whites—Bouvardias, Camellias, Carnations, Forget-me-not, Gardenias, Heaths, Pelargoniums, Roses, Stephanotis, and Tuberoses; scarlets—Bouvardias, Camellias, Carnations, Heaths, Pelargoniums, crimson Roses, and Gladiolus; blues—Cornflower, Forget-me-not, and Agapanthus; purples—Heliotrope and Violets; miscellaneous—Eschscholtzia, Mignonette, Sweet Sultan, Fuchsias, variously coloured Roses, Pelargoniums of different hues, Statice latifolia, Petunias, Arbutus flowers, Veronicas, and many others. Button-hole bouquets consist for the most part of a yellow Rose bud, or something in that way, supported by a few pips of scarlet Bouvardia and blue Forget-me-not, the whole being backed by a frond or two of Maiden-hair Fern. Coat flowers consist of a mounted Camellia, or Gardenia bloom, resting on a little green foliage. Hand bouquets are composed of so many varieties of flowers that it would be of little use to enumerate them. The little wax-like bell flowers of the common Arbutus, though but seldom used, are nevertheless most useful in floral arrangement of many kinds; before they are employed, however, they must be divested of all leaves, which are heavy, and quite out of keeping with the delicate little blooms. Thus set free, and mounted on wire, they are quite equal to Heath in a coat bouquet. At present, there may be bought in Covent Garden Market quantities of a very small-sized white Michaelmas Daisy, which, where other flowers are scarce, will be found to be useful. Being light and airy-looking, it does not tend to give any arrangement in which it may be used a heavy appearance. A pretty and, at the same time, inexpensive arrangement might be made as follows:—Take a triplet Hyacinth glass (but, if that is unobtainable, some other kind will do, provided its form is somewhat in harmony with that of the other), the Daisy referred to above being white, almost any colour will harmonise with it, but scarlet and blue will make, perhaps, the most showy associates for it; then, as a scarlet, nothing can be more effective than the common Zonal Pelargonium, and as a blue there are still some Cornflowers to be had or Forget-me-nots. Pink Pelargoniums might be used in place of the scarlet; and, if the pink be selected, a few bunches of a pink and white Fuchsia added would enhance the general effect. These materials, neatly arranged, would look well and cost but little.—A. HASSARD, *Upper Norwood.*

Cottagers' Gardens.

As ground becomes vacant, some plan of cropping for the ensuing year should be formed, in order that manuring and cultivating, according to the crop intended to be grown, may be systematically carried out; for fresh manure, that would promote a luxuriant growth in a green crop, such as Cabbage, would probably spoil the quality of a root crop, such as Potatoes or Carrots. These succeed best in soils moderately rich in manure, but deeply worked, so as to withstand the effects of drought. Trenching should not in all cases be performed in the same manner, as when the sub-soil is bad in quality, only a small portion of it should be brought to the surface at any one time; the bottom spit, however, should be thoroughly broken up and all kinds of garden refuse mixed with it, by which means, all kinds of soils may in time be improved both in quality and depth. This is a good season for carrying out alterations, such as making new walks, or repairing those already made, as trees of any kind that happen to be in the way, may now be safely lifted. Any unproductive or worthless varieties of fruit trees should be rooted up at once, and a few healthy young ones planted in their places, taking care that the ground is properly prepared for them. Do not dot them about as if self-sown, but plant them so that the shade from them may not interfere with the regular open spaces devoted to vegetables. The outdoor display of flowers will, of necessity, become weekly more limited, but increased neatness should be made to, in some measure, compensate in this respect for any lack of beauty.—J. G.

NOTES AND QUESTIONS.

[The following notes and questions came to hand or were answered too late for insertion in their several departments.]

Sea Buckthorn (*Hippophae rhamnoides*).—We have received from Mr Wm. Paul a branch of this useful hardy shrub literally a rope of little round orange-yellow berries, that must render a bush of it highly ornamental. It grows naturally on sandy soil, and on comparatively bare cliffs on some parts of our eastern coast.

Acacia lophantha, as a Table Plant.—Permit me to direct "W. T. P.'s" attention to the usefulness of small plants of this *Acacia* for table decoration. I have had a pair of small plants in daily use for some time past, and when on the dinner table they looked quite like some light growing Fern. The effect of this plant for table decoration is worth a trial; it is inexpensive to purchase, and the atmosphere of heated rooms does not seem to affect it as it does more tender plants.—A. B. N.

Fields of Sweet Briar.—All along the coast from Prestonpans to Aberlady in East Lothian, there is a perceptible odour of Sweet Briar, which may be found growing there by the acre, loading the air with its delightful perfume. Even the rabbits, which are very numerous there, seem to enjoy its cover, bobbing, as they do, in and out from under its fragrant protection. They, no doubt, eat the young shoots; hence its dwarf and scrubby appearance, and inclination to creep along the ground and multiply to an unlimited extent.—H. K.

Trees to Stand the Sea-breeze.—I have had a turn through Connemara lately, and on Saturday week ascended "Maebrea," at the mouth of the Killery, which is nearly 3,000 feet above the sea level. I, however, found nothing on it save the very commonest plants. I had an opportunity of seeing some of the plants which grow best exposed to the sea-breeze of the Atlantic. *Pinus insignis* is a most valuable plant, and by far the hardiest of the genus there, standing where the Scotch Fir cannot lift its head. *Thujaopsis borealis* is also very hardy, and suitable for planting there. The finest evergreen is *Eucallia macrantha*, which grows as large as a Laurel bush. Fuchsias are the best hedge plants.—D. Moore, *Glenties*.

The Fruiting Duckweed (*Nertera depressa*).—I was much pleased to see some plants of this little gem, the other day, in the nurseries of Messrs. Dickson & Co., Edinburgh. It is a small prostrate Alpine plant, exceedingly pretty and useful, either on rockwork or in pots. A light sandy soil suits it admirably. The flowers, which are white, are small, and the fruit, which is transparent and glistening red, resembles miniature Holly berries, which seem strewn amongst the foliage. The appearance of the small berries nestling amongst the leaves, which are small, oval, and dark green, is strikingly interesting; altogether this is one of the most charming little plants with which I am acquainted.—J. Muir, *Clonfert*.

Ivy on Cemented Walls.—I am about to build a house, and I would like the outside walls covered with Ivy. What I am anxious to know is, will Ivy grow on the walls if they are covered with cement smoothed and marked into squares to imitate stone, or whether it would be better to cover them with cement rough cast? In laying out the ground, I am following the instructions given in the "Wild Garden," and I have thought that if I could get the house covered with Ivy, it would be in keeping with its surroundings; and that it would also help to encourage birds, of which I am very fond.—R. A., *Workington, Cumberland*. [Ivy will succeed very well against cemented walls after it has been planted about six months. Take care to well break up the ground in which it is to be planted, and if the existing soil is bad, remove it and replace it with good earth.]

Leucopogon Cunninghamii.—This is a winter-flowering plant not sufficiently known in gardens. It is a white-flowered plant of great elegance, bearing tiny tufts of flowers and leaves, each tuft being a miniature bouquet in itself. For what are called button-holes, it is unsurpassed even by white Heath for long endurance. We have been so accustomed to quickly got up flowers, that elegant hard-wooded lasting plants have been overlooked. Any nurseryman, I imagine, who got up a houseful of this elegant plant would meet with a ready sale for it. Being such a quiet-looking plant, many might pass it by without notice; but when pointed out, it never fails to command what it deserves—admiration. It is a greenhouse plant, and thrives best in sandy peat, under the treatment usually given to Cape Heaths. I never saw it planted out of pots in a conservatory; but I imagine that it would make good growth treated in that way, and its tiny panicles of flowers would be enlarged under such circumstances.—H. K. F.

New Pink-coloured Perpetual Carnation.—Comparatively few lovers of plants know that there exists in commerce a pink-flowered Carnation of the large-flowered *Souvenir de la Malmaison* section. It was sent out by Messrs. Methven & Co., Edinburgh; although a somewhat coarse flower, the old flesh-coloured variety is still a great favourite, flowering, as it does, where there is a series of plants, all the year over. The pink one mentioned is quite as good and useful, and, no doubt, in time, will become quite as popular as it deserves to be. Its habit is identical, judging from young plants, with that of its fellow. It is in every way a commendable plant, and worthy of further distribution among lovers of what are commonly called tree Carnations. Whether the pink will equal the flesh-coloured one in size of flower, which sometimes under good cultivation measures 6 inches in diameter, remains to be seen.—H. K.

Shanked Grapes.—I send you some diseased Grapes, which I should be glad if you or any of your correspondents would tell me how to combat.—S. H. T. [The Grapes are badly shanked. The shanking of Grapes is produced through various causes, which it is difficult to describe. It is generally owing to weak or deficient root-action. The cause may have been dryness at one time, and then excessive wet, resulting in sourness of the soil, which has caused the roots to perish. Stripping off a great quantity of leaves at one time is also supposed to have the same result. We have frequently noticed shanking when the Vines grew in borders rich with humus, resulting from many yearly deposits of manure on the border. Excessive cropping is also a sure promoter of shanking. If your borders are imperfectly drained, as we presume they are, remove all the soil, except that immediately about the base of the stem, down to 4½ feet below the surrounding level, then bottom with concrete 2 inches thick; on this place a 6-inch layer of roughly-broken stones, which should be covered in with large turves, and a drain should be made along the front sufficiently deep to carry off superfluous water; the remainder of the border should then consist of roughly-chopped turf, to which has previously been added a liberal quantity of ground bones; crop the Vines lightly for a season, and there will be little danger of shanking.]

A Grumble about Dinner-table Decoration.—A writer in the *Pall Mall Gazette*, is despondent over the consequences of modern fashion in the dining-room. "I know no greater feeling of dejection that ever comes upon me than when from my place in the column that moves into the dining-room I first catch sight of the table. I know I shall have to sit there for two or three hours, with no greater variety of talk than I can get by turning from the lady on one side of me, whom I have brought in, to the lady on the other side, who has been brought in by some equally unhappy gentleman. There was an Egyptian herald of mighty voice, whom Herodotus tells us of as one of the host with which Darius invaded Scythia. When this monarch, in his retreat, arrived at night at the Danube, and found his bridge of boats gone, he sent for this man, who standing by the bank could make his voice heard at the other side of the stream. Now, Sir, if I were as highly gifted as this herald, I should not despair of making myself heard even across a modern dinner-table; but my lungs are of but moderate capacity, and when I shout to Histiaius the Milesian, Histiaius cannot hear me. Much as I miss the narrow table of my younger days, no less do I miss the dark colour of the mahogany. Long before dinner is over my eyes suffer from the glare. Above me and all around me there is an excess of light; beneath my eyes is the dazzling table-cloth. I would wear, if I had but courage, the pair of coloured spectacles which I brought from Switzerland, and which afforded me such pleasant relief under far less trying circumstances. How pleasant it used to be in old days to see the white table-cloth rolled up and carried away. How I should now delight, if only I dare, to give it a pull at one end and to carry it and the contents of the greenhouse that it bears right off the table. The fact is, that we have allowed the ladies to turn that which should be the pleasantest of all meetings into an occasion of the vilest of all displays. A ritualism, differing in reality but little from that which has crept into churches, has invaded our dinner-tables. If we had not our clubs to which to fly, our case would be a desperate one indeed. Now, Sir, when I dine, I like to dine at my ease. I like to dine in a cool room, in a quiet light, and in a small company. The ladies, I fear, take too much pride in these solemn festivities ever to consent to give them up. They will, in spite of our protestations, go on making broad their tables and enlarging the borders of their table-cloths. They might, however, keep their wide tables, their greenhouse plants, their blaze of gas, their heated air, their crowded parties, for all the fools of their acquaintance. The young Ritualist curate would always be there to say grace, and to lend the sanction of the Church to the ostentatious display. Sensible people should be asked a few at a time to enjoy at a narrow table good food, good wine, good air, and good talk."

Almeria Grapes.—During the last few years the growth of this Spanish Grape has very extensively increased. Shipments are also earlier than formerly, as of late they have commenced to arrive in London about the middle of September, when there is little or no demand for them, in consequence of the heavy supplies of Lisbon. The latter, on account of their non-keeping quality, are always sold immediately on arrival, and generally at prices far below the usual run of Almeria.

THE GARDEN HARVEST.

Oh, favours old, yet ever new;
Oh blessings with the sunshine sent;
The bounty over-runs our due,
The fullness shames our discontent.

We shut our eyes, the flowers bloom on;
We murmur, but the Corn ears fill:
We choose the shadow, but the sun
That casts it shines behind us still.

Give us with our rugged soil
The power to make it Eden fair,
And richer fruits to crown our toil,
Than summer-wedded islands bear.

Who murmurs at his lot to-day?
Who scorns his native fruit and bloom,
Or sighs for dainties far away
Besides the bounteous board of home?

Thank Heaven, instead, that Freedom's arm
Can change a rocky soil to gold;
That brave and generous lives can warm
A clime with northern ices cold.

And by these altars wreathed with flowers,
And fields with fruits awake again
Thanksgiving for the golden hours,
The early and the later rain.

—JOHN G. WHITTIER.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE EARLY OPENING OF KEW GARDENS.

The popularity of the Royal Gardens at Kew is a long and well-established fact, to which each annual report bears full and ample testimony by its record of the thousands and hundreds of thousands who visit those gardens yearly. The motives which induce these visitors to go to our national botanic garden are, as a matter of course, exceedingly diverse. That is a fact no observant visitor who has mingled with the crowds on a summer's afternoon, and listened to their conversation, will gainsay. Some, it will be found, are bent on study—purely botanical; these are few and far between, and possibly may be more frequently found turning over dried specimens in the herbarium, and analysing equally dry botanical descriptions, than investigating plant structure at the fountain head in a living state. Others, by their lively and somewhat boisterous mirth, indicate at a glance that they are gregarious; and, of a truth, they come in what may well be denominated shoals, prepared to derive a part of their enjoyments from the many interesting objects the gardens present; but an equally great proportion from the badinage that passes freely amongst themselves. These constitute the great mass of visitors. Then, again, we have the vigorous constitutionalist, who goes to acquire a well-sharpened appetite for the good things which constitute a dinner at the far-famed "Star and Garter." But these are not all. Frequently you may see representatives of another, and an essentially distinct, class—men who usually affect the solitary—at least, whose companionship consists in a note-book, and whose horny hands indicate at once that, albeit literary they may be on that occasion, they are wont to wield a heavier implement than either the pen or the pencil; this last belongs, at a glance, to the horticultural class. The very interest they evince in making notes at once confirms us in the fact that they love their business, profession, or calling, whichever term you like to accept—"profession," I think it is entitled to, seeing that it dates back through all time, and claims priority to all others; be this as it may, you will generally find that such men are early at the gates. Many come a long distance, and as their visits to Kew are necessarily few and far between, they are anxious to utilise every spare moment. Of this class of visitors some are young, ambitious to acquire during their London visit or sojourn, as the case may be, all the information on plant lore they possibly can; others are old weather-beaten representatives of the craft, possibly kings and princes of horticulture in their own respective localities, and consequently anxious to maintain their well-earned reputation by gleanings such information as abounds in the royal establishment. It is on behalf of this class of visitors, who, though comparatively few in number, possess a sort of representative character that increases their importance in a manifold degree, that I purpose making a few remarks on a topic which is not only uppermost in the gardening periodicals, but is deemed worthy of ventilation in the columns of the daily papers. By the way, I fear that the ventilation is what must be called a down draught, as your correspondent (see p. 357) appears to reckon the boon which the earlier opening of the gardens would confer on the public, as not to be gained without such a sacrifice in the efficient management of the institution, such as no public advantage would justify. The suggestion that the number of attendants would require to be doubled were the gardens opened to the public, say at ten o'clock, is so patent an absurdity to any practical mind, that I am disposed to pass it over without comment—beyond this, that it appears to lead to the inference that during the time the public are admitted to the gardens, one half of the staff would be doing nothing, and the other assisting them in that arduous operation. The actual work of the establishment to be done by the two combined, prior to the

opening of the garden to the public; now, knowing as I do, the authorities at Kew, great and small, I cannot for one moment imagine that they would endorse such a necessity. Let us, supposing the early opening movement were carried out, analyse the probabilities consequent thereon. Supposing the gardens were opened at ten o'clock, would the army of London sightseers, be congregated as it were, to storm the entrance gate at that early hour; I think I am justified in saying, the probability is, they would not; would our constitutional friend, with the "Star and Garter" in his mind's eye, be found there? I think the very strong probability is, he would not. Our purely botanical friend, being one of the select or elect, which you like, would possess the talismanic "open sesame" without calling into request the services of the portly janitor of those handsome gates; but, I think, the strong probability is that the generic type to which I have already alluded, and of which Adam was the founder, would be represented by more than one solitary individual. As a disciple of the great school of horticulture he could spend his annual holiday (not half-holiday as heretofore) broken, very possibly, in order to realise the full appreciation of the boon thus conferred, by a sojourn, about mid-day, to the "Rose and Crown," or the "Coach and Horses," to refresh the inner man, analyse his notes, and return, re-invigorated, to his work. Would it not be conferring a boon upon such a class—of which the bone and sinew of horticulture is composed—to allow them a before dinner, as well as after dinner, inspection of the gardens? Certainly, from my own experience, I will say that, for a detailed examination, even of the most superficial character of one-tenth part of the plants at Kew, the narrow limit of an afternoon is a complete absurdity. Kew Garden has been, is, and, I trust, will continue to be, an educational establishment. It has a purpose far higher to fulfil than the mere gratification of a host of cockney excursionists and sightseers, and in fulfilment of that purpose, I say distinctly, there is no practical reason why it should not be open to the public at ten o'clock in the morning. Do the Botanic Gardens at Edinburgh, at Glasnevin, and at Liverpool find that it is detrimental to the working of those institutions to open at an earlier hour than our national establishment? I think not. Have they found that admission at an earlier hour interferes with the routine work which is essential in all gardens? I think not. Surely the London public, who have enjoyed a longer and more effectual training than their provincial brethren, are not less cognisant of the rights of mine and thine! so as to compel the necessity of an attendant in every greenhouse on the place! The privilege of inspecting the gardens on a Sunday is limited to half the day, and rightly so; but I would ask, are all the staff in attendance on that day? I may be wrong, but I think not. Those who oppose the movement on the ground that the mens' time would be required to look after the public rather than the ordinary practical work of the place, estimate the good conduct of the London public at a standard far below what their experience ought to justify; on the contrary, it is a noteworthy fact that scarcely any appreciable damage has been done by visitors to these gardens during the last few years. Even supposing the opening of the houses earlier than at present should cause some inconvenience, surely the gardens and pleasure grounds at Kew require no stricter surveillance than the many other parks and public gardens of the metropolis. The suggestion made in an article on this subject, to which I have already adverted, namely, that that portion of the gardens known to nearly everybody as the pleasure grounds should be opened at ten o'clock, partakes of the nature of a compromise, and I feel sure the authorities at Kew will deem it quite unnecessary to adopt a half-measure; but, as has heretofore been their wont, come bravely to the front and meet the public wish; which is, in my opinion, neither unreasonable nor extravagant. Should a little additional expense be incurred, surely our national exchequer would be both willing and able to grant the same in the next year's estimates. My impression is strong, however, that beyond the increased remuneration to gate-porters and police for extra hours of duty, the additional expense would be little or nothing.

AN OLD KEWITE.

NOTES OF THE WEEK.

— MR. J. TRAHERNE MOGGIDGE, writing from Mentone, informs us that both there and at Hyères the people speak of the extraordinary crops of fruit and grain, which they have had this summer; and the Olives still remain to attest the truth of this, the pale green, unripe berries, giving a new tint to the trees, the branches of which are in places dangerously strained by their weight.

— A POWERFUL organisation is, we hear, to be set on foot for opening Kew Gardens at an earlier hour on Sundays than at present. While Hampton Court Gardens are opened at ten or eleven in the morning, Kew Gardens are not opened until two o'clock in the afternoon, to the great annoyance of a large number of Londoners who go down every Sunday.

— MR. DAVISON, White Cross Nurseries, Hereford, writes to us to say that Mons. Thiers Rose is not sufficiently known or appreciated as a late autumn bloomer. It is much finer now in size and colour than at any other season. "We have recently cut (he says) from the Manetti stock, blooms of this Rose 5 inches in diameter, and in colour a deep rich crimson, shading off to intense purple on the outer petals. I have (he adds) one now in a vase on my writing table, and nothing more exquisite in colour and fragrance has been cut during the whole season."

— THE Temple Gardens are just now well worth a visit. The Chrysanthemums are in bloom, and the turf, fresh and green for London, affords a cheerful relief from the bustle and noise of the busy streets. We notice that the old Elm near the fountain has been cut down, a circumstance not to be regretted, inasmuch as additional light and air are thus afforded to some promising young Planes which will be greatly benefited by the change. Two or three fine Catalpas here still retain their foliage, showing that this tree is well suited for town garden decoration.

— SOME very beautiful crosses and other designs, in silvery Immortelles, may now be seen in Covent Garden Market. They consist of large white Helichrysums, with which are associated bleached Grasses of different kinds, but more especially the common Hare's Tail (*Ligurus ovatus*), and different kinds of Quaking Grass (*Briza*), while, occasionally, the bright leaves of the Cape Silver Tree (*Leucodendron argenteum*) are employed in their construction with excellent effect.

— WITH reference to the wail about the degeneracy of young gardeners, which has existed for some time in the pages of some of our contemporaries, Mr. David Thomson writes to us to say, "I get first-rate fellows—far too good for the money they get." Our own impression is that there is no justification for writing of this kind, and that the young gardeners of the present day are in no sense inferior to those of any preceding time.

— WE have received from Mr. Peter Grieve excellent examples of a new seedling Pear, raised at Culford and named Lucy Grieve. In shape it is somewhat intermediate between William's Bon Chretien and Marie Louise, the flesh being white and agreeably perfumed like that of the Jargonelle. It is of excellent flavour and deserves to take a place amongst first class dessert Pears. We understand it is to be figured in the November number of the *Florist and Pomologist*.

— THE Chartometer or map-measurer, which we have just received from the inventor and manufacturer, Mr. Russel Morris, of High Street, Birmingham, is a very ingenious and useful instrument. We have carefully tested the accuracy of its measuring powers, and find that the distance between point and point on all maps laid down to a proper scale can be ascertained with the greatest nicety, however zig-zag or irregularly roundabout the road may be, from one given point to another. We shall give a more detailed notice of this contrivance in a future number.

— SEVERAL beautiful varieties of *Agnus Castus*, have been recently produced. A. robusta paniculata is a vigorous shrub, with widely-spreading branches; the foliage is soft to the touch, and the white flowers, tinged with pink, are developed in remarkably large panicles. Another variety, in some respects superior, has panicles which often attain the length of 16 inches or more. A. C. macrostachya, has flowers of a fine delicate blue, slightly tinged with lilac, which, placed near to A. C. alba, with purely white flowers, is said to produce a charming effect in the front line of shrubberies. These are described at length by M. Carrière in the *Revue Horticole*.

— WE have received from Mr. Divers, of Wierton House, Maidstone, a collection of different kinds of Grapes grown in the open air on a south wall, on which there is said to be a heavy crop. They consist of what is called American Cluster, a kind whose leaves become variegated in autumn, Black Hamburgh, Esperione, and Royal Muscadine. Of these the last is by far the best, being sweet, and altogether excellent, while the others (even the Esperione) are unripe and acid. It is the Chasselas de Fontainebleau of the French, and one of the best early outdoor Grapes in cultivation. Against

whitened walls we are of opinion that it might be brought to as great perfection in this country as it attains in France. We have also seen and tasted some fruit of the large Black Cluster, ripened at South Kensington, within a stone's throw from the Museum, the colour and flavour of which were excellent.

— MR. LASCELLES informs us that the curvilinear system of building wooden houses introduced by him, and illustrated in last week's number of THE GARDEN, is a patented invention. It is adapted for lean-to Vineries and plant houses against walls as well as for conservatories.

— MESSRS. HOOPER, of Covent Garden, have sent us a Begonia, the foliage of which is much more richly coloured than that of B. Pearcei, which is one of its parents. Above, the leaves of the new kind are velvety-green, marbled and veined with silvery-grey; below, they are of a rich crimson colour.

— THE Belladonna Lily, recently mentioned in our columns as a beautiful, hardy, and too much neglected plant, has flowered splendidly this season in an open border in the garden of the late Dr. Brand, St. Asaph, North Wales. The plants were even more vigorous than is usually seen in front of walls, and formed an attraction in the neighbourhood for several weeks.

— AMONG new or rare plants of interest to horticulturists, *Stewartia grandiflora* has been recently grown by MM. Thibaut and Keteleer, of Sceaux. This newly introduced Japanese species belongs to the same family as the Camellias and Gardenias. It is a shrub attaining occasionally the height of 6 feet or more. The flowers, which resemble those of a single Camellia, are pure white, and very large, the mass of stamens in the centre being of a rich and brilliant yellow. This fine shrub is perfectly hardy in the open air.

— A few months since Lord Skelmersdale, while visiting San Francisco, was struck with the fine finish of the wood-work Lick House, and also with the rich panelling of Laurel and Redwood in the Capitol at Sacramento. He remembered his admiration of the woods after his return to London, and, according to the *Californian Horticulturist*, sent for a collection for the adornment of his residence in London. The order was received by Messrs. Jacob Strable & Co., who are about to forward, by the barque Cuba, some of the finest specimens of Californian woods which the market affords.

— MANY of our most remarkable parks and gardens are what is conventionally termed show places. Windsor, Blenheim, Knowle, and many others that might be cited, are thrown open to the public. Lord Lyttelton, the owner of the beautiful park of Hagley, takes a very sensible view of the subject, in answering a complaint urged by a "Resident at Hagley," to the effect, that the summit of the highest of the Clent Hills (adjoining the park), upon which an obelisk has been placed, is now rendered inaccessible to the public. He writes as follows:—"Some persons, I believe, think that in these days the owners of parks ought to allow all the world to go about all parts of them. Now, it is enough to say that this would have to depend on circumstances to some extent. If Hagley Park, with its peculiar conformation, its lovely dells, and recesses of all kinds, were thrown open to the whole of an enormous population, it would be tantamount to depriving my family of the use of most of it. As long as private property in parks is allowed I do not think this is reasonable." Lord Lyttelton then states the conditions laid down with reference to the admission of the public to the park, and, in remarking that the great expanse of Clent Hill, with its famous scenery, is opened to all the world, he says, "I have been advised to take measures to have it enclosed. Nothing would induce me to do so, and the more people I see there the better I am pleased." With regard to Obelisk Hill, his lordship says it has been let for many years, like any other land, and if the tenant chooses to exercise his undoubted right to warn off trespassers, he can certainly not interfere with him. There are, however, two public highways on the hill, though not on the highest part of it. No one will gainsay Lord Lyttelton's plea for maintaining the privacy of some portions of Hagley Park; but in the case of Obelisk Hill, the reply hardly seems quite full and fair. We all know the paramount influence which landlords can, whenever they choose, exercise over tenants, and it seems evident enough that an arrangement might be effected by means of which ramblers in the bracing air of the Clent Hills might be enabled to reach their highest point—a desideratum very generally felt. It is easy to say that two highways pass over the hill in question; but neither of them, as is acknowledged, pass near the top. Could not Lord Lyttelton, who is well known for his liberality, make a road right over the summit, leaving a space, say a quarter or half an acre, round about the obelisk, near which a few plain stone seats might be placed, and so gratify the longings of ramblers and sightseers; while, at the same time, by planting hedges along the road and round the small enclosure, the susceptibilities of the tenant, regarding privacy and trespass, would no longer be outraged by illegal intruders?

THE INDOOR GARDEN.

MESEMBRYANTHEMUMS.

THESE strictly belong to South Africa, where there may be found no fewer than 250 species or thereabouts. For the sake of convenience Haworth has divided Mesembryanthemums into forty-three sections and sub-sections. *M. debile* and *crassifolium*, though thought by some to be Australian species, nevertheless belong to the Cape, and probably went first to Australia from there or from this country. *M. cordifolium* (the Ice plant), so well known in country districts, was sent to Kew a few years ago by Baron Mueller; but what more likely than that some plant-loving emigrant took it out to Australia as the Scotchman did the Thistle. The majority of Mesembryanthemums are easily grown, and make first-rate window and rock-work plants. Common garden soil suits them perfectly; the kinds represented in the accompanying illustrations, and their immediate congeners, may be placed among fancy sorts—little gems well worth cultivating on account of their quaintness and variety rather than as subjects for purposes of general decoration. For those who are fond of uncommon forms among plants, but who have little time or space to devote to their culture, these are plants well worth attention. *M. minimum* belongs to the sphaeroide section, a group in which there are four others—*M. truncatulum*, *obconellum*, *nuciforme*, and a new species at Kew, which is much larger than the others, and which has been named *M. truncatellum*. These plants never form a stem, and increase in size by bursting through the fleshy top when the outer part shrivels up, and the new formation takes its place. The flowers, which issue from the centre, are pale rose. Plants like these require to be potted in very sandy soil, and require to be well drained, when they will grow well. *M. testiculare*,

of which an illustration is given on another page, is a rare and beautiful plant, with a skin as smooth as silk, and very glaucous. It belongs to the sub-sphaeroide division. It is sometimes called *M. octophyllum*, but I never yet saw it with eight leaves. It is somewhat delicate, and should be potted in half silver sand, the other half being loam and brick rubbish, and should be kept near the glass in a dry house. *M. fissum* is closely related to this species, but it is more easily cultivated than *M. testiculare*. The most interesting of the Mesembryanthemums belonging to Haworth's section Ringe, so named on account of their resemblance to the jaws of animals, are *M. tigrinum* (Tiger's Chap), *M. lupinum* (Wolf's Chap), *M. felinum* (Cat's Chap), *M. erminum* (Rat's Chap), *M. murinum* (Mouse's Chap), and *M. mustellinum* (Weasel's Chap), all exceedingly interesting, and easily cultivated kinds; their flowers, which are all yellow, open in the afternoon. The next section, Scapigera, contains *M. caninum* (Dog's Chap), *M. aguinum* (Lamb's Chap), *M. vulpinum* (Fox's Chap), all of which have been cultivated for years. They form valuable plants for rock-work in summer, standing well out of doors in the south of England from May until October. They are easily propagated by pieces pulled or cut off and laid in the sun on moist sand, where they root freely in a few weeks, and often keep on flowering as though nothing had happened. For window decoration, and for general purposes, I have

found the following to be the most useful, free-flowering, and easiest grown:—

<i>Drooping Species.</i>							
<i>M. tricolorum</i>	.	.	red.	<i>M. formosum</i>	.	.	red.
<i>M. diversifolium</i>	.	.	red.	<i>M. retroflexum</i>	.	.	red.
<i>M. Rossii</i>	.	.	red.	<i>M. imbricans</i>	.	.	red.
<i>M. curvifolium</i>	.	.	white.	<i>M. floribundum</i>	.	.	red.
<i>M. Blandum</i>	.	.	white.	<i>M. candens</i>	.	.	white.
<i>M. conspicuum</i>	.	.	red.	<i>M. barbatum</i>	.	.	red.
<i>M. spectabile</i>	.	.	rose-red.	<i>M. polyanthum</i>	.	.	red.

<i>Erect Growing Sorts.</i>							
M. stelligerum	.	.	red.	M. croceum	.	.	yellow.
M. striatum	.	.	orange.	M. caulescens	.	.	rose.
M. stipulaceum	.	.	rose.	M. roseum	.	.	rose.
M. corallium	.	.	white.	M. aurantiacum	.	.	orange.

Of these, the first eight are strong growers; the next three moderately strong, and the last three slender kinds. These form a good selection, and may be readily increased by means of cuttings, struck in the open grounds in summer. In winter they should be kept tolerably dry and free from frost.

J. CROUCHER.

SHOW CASES FOR ORCHIDS.

BEING desirous of placing my Orchids, when in flower, where they could be enjoyed by others besides my gardener, I have constructed in my conservatory a large glass case, in which rock-work and Ferns have

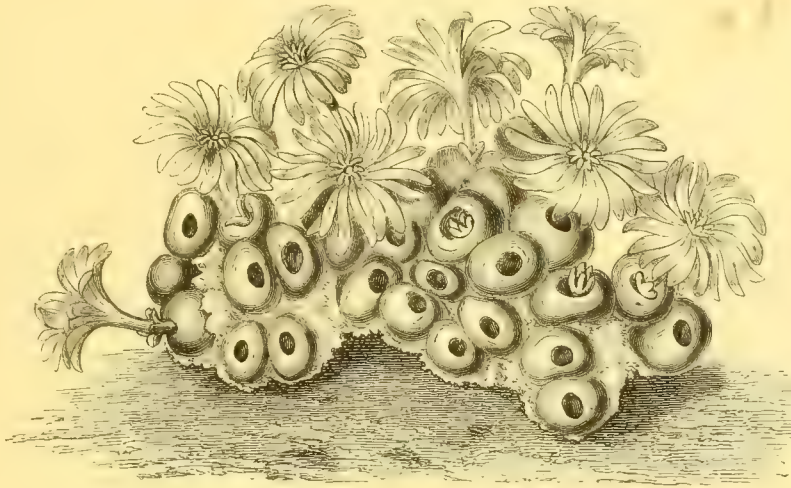
been placed. The Orchid-pans being set in greenery, and the blocks hung above it, produce a very charming effect, delighting the whole household, the very servants coming continually to have a good look at what they term, "them beautiful flowers." But their glory lasted for a very short time. They began to spot in two or three days, and blooms that should have flourished for a month perished in a week. Those from the East India House drooped in 24 hours. As yet I have used no artificial heat, but the conservatory pipes pass through the case, and, when they are heated, a certain degree of warmth will be maintained. I

cannot, however, warm the Orchid case without warming, also, the whole conservatory, and this cannot safely be done for the present. The cause of the spotting and speedy perishing was, doubtless, damp. Could you, or any of your experienced readers suggest some cure for this evil? Or, if the present show case admits of no remedy, can any person from his own experience advise me in what manner I may set out the Orchids for show in or close to the conservatory, removing them for that purpose when in flower from the plant-houses, where no visitor can be persuaded to seek them. Whatever the plan, it is indispensable that, if they are to have a high temperature, they should be seen through glass, so that their admirers may gratify the eye without enduring a Turkish bath.

Moat Mount, Hendon.

EDWARD W. COX.

[Our correspondent has hit upon a want long felt among many who grow Orchids, and other tender exotic plants that require much heat and moisture. In the instance above cited, the flowers decay through moisture condensing upon them—more especially during the night time when any sudden change occurs in the external temperature. When this happens, condensation of moisture on the flowers is sure to be the result, unless the case employed is thoroughly ventilated. A moderately humid and warm atmosphere is rather favourable than otherwise to the duration of these flowers, provided there is plenty of fresh air allowed to continually enter the case; it is stagnant humidity which does the harm. Some years ago Mr. Diamond, then gardener at Green Boyd, Halifax, found some difficulty in growing *Anæctochili* on account of stagnant moisture; and to obviate this he



Mesembryanthemum minimum.

contrived a case, the sides and ends of which were covered with perforated zinc. This, while it prevented cold draughts, allowed a free circulation of air to enter from the general atmosphere of the stove in which it was placed, and we think our correspondent would find such a contrivance superior to an ordinary wooden case in many ways. Of course, the case not being heated is a serious drawback; for it is well known that, while warm moist air means genial humidity and health, cold moist air, especially if stagnant, means damp and decay, especially in the case of delicate flowers grown in a hot plant stove. The Orchid-houses in the Royal Horticultural Society's Garden at South Kensington are built alongside a cool glass-covered corridor, and the plants when in flower are staged on a bench or placed near to the corridor, from which they are conveniently seen by visitors, who are not inconvenienced by the heat and moisture; while, from a cultural point of view, the plants are protected from cold draughts caused by the continual opening and closing of the doors. A somewhat similar contrivance may be seen at the South Kensington Museum, where a cool Fernery extends past five or six large plate-glass windows, through which the graceful forms and fresh greenness of the Ferns are seen to great advantage. At the City of London Club, Old Broad Street, there are some charming little window conservatories, in which choice Ferns and foliage plants grow well, and in which some Orchids would succeed perfectly. We have often thought what charming effects might be obtained in a similar manner by constructing a little conservatory or large heated case alongside the drawing-room or library, and separated from them by a plate-glass partition, through which the bright tints of Orchids and other plants in flower, and the fresh greenery of Ferns, graceful Bamboos, or other elegant-growing plants might be seen, as desired by our correspondent, without having to take "a Turkish bath" at the same time. The conservatory, so-called, is in many cases an actual nuisance, expensive to keep, while it does not furnish a tithe of the enjoyment afforded by a little case fitted with the choicest flowers only, like that suggested above, which could be attended to by the gardener or his assistants in an unobtrusive manner either in the morning or evening. In the particular instance in question, a case with back and ends of wire gauze or perforated zinc would be a great improvement on an ordinary one of wood, and, if possible, it should be heated by a small coil of pipes independent of the conservatory in which it stands. The rock-work, with its drapery of Ferns and Selaginellas, must necessarily throw off a large quantity of moisture, and if the case cannot be heated, then it would be more conducive to the lasting beauty of the Orchids if they could be removed, and the greenery necessary to show off the flowers introduced in the shape of pot plants. By these means the atmosphere of the case could be kept much drier than at present, judging from our correspondent's statement, already given. We shall, however, be glad to hear from any horticulturist who has succeeded in overcoming difficulties of this kind.—B.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Impatiens repens.—This is a pretty little basket plant, with prostrate stems of a thick or succulent character and delicate pink colour, clothed with small heart-shaped leaves, not unlike those of *Fuchsia procumbens* in form. The flowers are tubular, and of a bright golden-yellow colour, which contrasts forcibly with the delicate stems and fresh green of the leaves. In a warm temperature this makes a very ornate plant, and is well worth culture.—P.

Raising Ferns from Spores. H. B. C. Sow in well drained pots or pans tolerably firm with sandy peat. Set these in pans of water, so that the soil may keep moist; scatter the spores on the surface of the soil, cover with a pane of glass. Never water, as sufficient will be absorbed from the pan. Place in a somewhat shady position in a stove or warm Fernery.

Solanum pseudo-capsicum.—This is largely grown in many gardens as a pot plant, and it may interest some to know that it is perfectly hardy in many warm and sheltered positions. A plant on the west wall of the herbaceous ground at Kew is just now gay with its bright coloured fruit, and forms a shrub a yard or more in height. In some parts of Devon and Cornwall, this plant would rival the *Pyracantha* during the autumn months, if planted at the foot of a sunny wall.

The Ivory-veined Amaryllis (*A. reticulata*).—This is a very effective foliage plant, having broad oblong leaves fully a foot long, and of a rich velvety colour, while a broad white stripe runs down the centre of each, giving a highly distinctive appearance to the plant. This *Amaryllis* is just now in bloom at Kew, each scape bearing two or three flowers the size and shape of those of *A. Belladonna*, and of a delicate rosy colour, distinctly reticulate or netted with rosy-veins. It well deserves culture, both as a foliage and flowering plant.—B.

Oncidium Kramerii.—Amongst Oncids, this is my favourite—not so much on account of the singularity of the blooms, as on account of the very abundant way in which they are produced. A plant with a few flower-spikes on it will bloom successively and incessantly for years. The blooms are produced from the apex of a long slender stem, and resemble a beautiful butterfly, both in form and colour, being provided with three upright narrow petals and a broad massive lower one, of rich substance, magnificently spotted with bright and dark golden-bronze, and handsomely frilled round the lower edge. It succeeds well in a stove temperature, in a mixture of peat, charcoal, and sphagnum.—J. Meis, *Clovenburg*.

A GARDEN ROSE AND ITS INHABITANTS.

We will not call the Rose the Queen of flowers; we will avoid all the common-places of which it has been the subject, and over which it has triumphed. Let us look at it only, and say what we see. There is no country without Roses: from Sweden to the coasts of Africa, from Kamtschatka to Bengal, or on the mountains of Mexico; the Rose flourishes in all climates and in all soils; it is one of the grand prodigalities of Nature.

The Rose tree before which we now stop is covered with white blossoms. Others bear flowers, varying from the palest rose to the deepest crimson and purple, from the most delicate straw colour to the most brilliant yellow. Blue is the only colour Nature has refused it.

Pure blue is a privilege which, with some few exceptions, Nature only grants to the flowers of the fields and meadows. She is parsimonious in blue; blue is the colour of the heavens, and she only gives it to the poor, whom she loves above all others.

Botanists, who take no account of either colours or perfumes, pretend that double Roses are monsters. What shall we call the botanists? We will exchange a few words with them before we come to the end of this journey.

This Rose tree was once a wild Rose, or Eglantine, which, in some obscure corner of a wood, decked itself with little simple Rose, each composed of five petals. One day, its head and its arms were cut off; and then the skin of one of the stumps which it was allowed to retain was opened, and between the bark and the wood a little morsel of the bark of another Rose tree was insinuated, upon which was a scarcely perceptible bud. From that day all its strength, all its sap, all its life, have been consecrated to the nourishment of this bud. The wound is close, but the cicatrice may still be seen. This Eglantine bears no flowers of its own: it is a slave, who works for a haughty master. That beautiful tuft of leaves and flowers are not its flowers or its leaves.

But, observe! there is, upon the green stem, just below the graft, a Rose bud, which begins to peep out. That bud will become a branch; that branch will belong to it. Oh, then Nature will resume her rights; the tyrant above, the beautiful Rose tree, the cultivated Rose tree, will wait in vain for the tribute hitherto paid to him; the sap will no longer ascend to him—it will all be kept for this dear sucker; there is not too much for it. But the gardener has perceived this attempt at rebellion: he has cut off the pretender, and all is restored to order. A few days, however, after this, the Rose tree again appeared to languish; the brilliancy of the monarch was diminished; the foliage looked yellow and faded; and yet the stem of the Eglantine was shining and smooth. Seek for the cause. The poor slave is ingenious and obstinate: he has caused a shoot to glide along under the earth, and only allowed it to see the day at a distance from its parent. Go back two or three steps, and behind that Gilly-flower you will see a little Rose bush, growing in a shade and silence. It is like what its father was; like him it has flexible branches and narrow leaves. Wait a year and it will become an Eglantine. Rub its leaves, and you will find they exhale a Pine-apple odour, peculiar to one species of Eglantine. Such was its father when he had branches and leaves of his own. Here it is in bud; here it is in blossom.

But the despot we left yonder is dead, and died of a horrible death: he died of hunger. The revolted slave who supported him, has, for a length of time, conducted under ground, all his sap to his well-beloved offspring. That beautiful crown of double flowers is withered: he himself, the poor slave, is sick, and will soon die; for he has kept nothing for himself. But he dies free; he dies avenged. He leaves a strong, young, and vigorous offspring upon which the little Eglantine blossoms of the woods will burst forth next year.

Our white Rose tree is not in this situation. The Eglantine which bears and nourishes it appears to be resigned to its fate; indeed, we might even say it is proud of its slavery. There are other slaves in the world who have no wish to break their chains when they are well gilded. Our Eglantine seems to take pride in its beautiful crown.

But what emerald is that concealed in the heart of that Rose? The emerald is living; it is a cetonian; it is a flat, square insect, with hard wings, like those of a cockchafer, and brilliant as a precious stone. Turn it up; its under side is of a still more beautiful colour; it is another precious stone, more violet than the ruby, more red than the amethyst. The cetonian, or Rose beetle, lives scarcely anywhere but in Roses. A Rose is its house and its bed. It feeds on Roses. When it has eaten its house, it flies away in search of another, but it prefers White Roses to all the rest. If by chance you find it upon another Rose, which is rarely the case, neither its abode nor its bed are to its mind. It would inspire you with the same pity that you would feel for a ruined banker, obliged to dwell in the fourth story, and to eat soup and bouilli as his only

banquet. It feels sad and humiliated by it; but still, breathing creatures must live. There are people who resign themselves to a worse fate than this.

Twenty flies, of different species and colours, are to be found upon different parts of the Rose tree; but I pay no attention to them—they are there by chance. They travel as you do; they trifle as I do. I only take heed of the natives of the country; I shall meet with the others elsewhere. We are not yet ready to quit our Rose tree; for strange things are going on at this moment.

Where are you, my dear friend? I have no idea where; but I very much doubt if the country in which you are sojourning be as smiling as my Rose tree; and, particularly, whether the inhabitants be as handsome, brilliant, and happy as the inhabitants of my Rose tree. And is it nothing to see living beings happy? But, to a certainty, you are viewing nothing so extraordinary as that which I see at this moment.

At the extremities of the young shoots of the Rose tree are myriads of very small insects, of a reddish-green, which entirely cover the branch, and seem motionless; they are aphides or Vine-fretters, which are born within a line or two of the place where they now are, and which never venture to travel 1 inch in the course of their lives. They have a little proboscis, which they plunge into the epidermis of the branch, and by means of which they suck certain juices which nourish them. They will not eat the Rose tree. There are more than five hundred assembled upon 1 inch of the branch, and neither foliage nor branch seems to suffer much. Almost every plant is inhabited by aphides differing from those of others. Those of the Elder are of a velvety black; those of the Apricot are of a glossy black; those of the Oak are of a bronze colour; those of Gooseberry trees are like mother-of-pearl; upon the Absynthe they are spotted white and brown; on the field Sorrel, black and green; upon the Birch, black, and another shade of green; upon the Privet, of a yellowish-green; and upon the Pear tree, coffee-coloured.

All enjoy a life sufficiently calm. You scarcely ever see an insect of this kind who is vagabond enough to pass from one branch to another. They sometimes go so far as to make the tour of the branch they dwell upon; but everything leaves us to believe that this is only done in the effervescence of ill-regulated youth, or under the empire of some passion. These outbreaks are extremely rare. Some of these aphides, however, have wings; but these wings only come at a ripe age, and they do not abuse them. The only serious care that seems to occupy the life of the aphid is the changing of its clothes. It changes its skin, in fact, four times before it becomes a perfect aphid; something like us men who try on two or three characters before we fix upon one, although, in general, we preserve three during our whole lives—one which we exhibit, one which we fancy we have, and another which we really have.

When the aphides have finished changing their skins, there only remains one duty to fulfil, which is to multiply their species; but they take very little heed about that; they have not, as quadrupeds have, to suckle their young—as birds, to hatch their eggs—or, as other insects, to enclose them in a cavern with necessary aliments. The aphid produces its little ones whilst sucking its branch; and it never turns round to look at the offspring it has given birth to. If the mother shows but little anxiety for the little one, the little one only returns the same amount of filial love that it has received of maternal love. It sets out, descends below the rest, takes its rank, and plunges its little trunk into the green skin of the Rose tree. There issue thus about a hundred from a single mother, who all fall in regularly below their predecessors, and begin to eat. In ten or eleven days they change their skins four times; on the twelfth day, in their turn, they begin to produce little ones, who take their rank, and themselves become prolific towards the twelfth day from their birth. The aphides of the Poppy are more precocious; in seven or eight days they have changed their vestments four times, and enjoyed what I should call the happiness of being parents, if they were not quite indifferent about the matter.

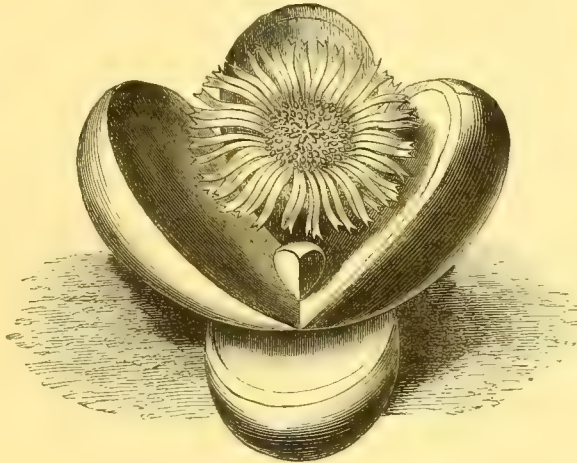
But, my good friend, you will say, upon reading this passage of

my journey, there is an important deficiency here: you profess to describe the lives of these aphides, and you don't say a word of their loves or their nuptials. I have here, you will add, an immense advantage over you. I relate to you, of every nation, a thousand whimsical or curious ceremonies connected with marriage. Yes, my excellent friend, I may answer, I could remind you of the loves of those two spiders, which, when starting for my journey, I fell in with in the corner of my window; but my present business is only with aphides. Aphides are acquainted with neither love nor hymeneals: aphides eat and make little ones, exactly in the manner of Mother Gigogne, who so delighted our childhood. Nature has taken the fancy to free herself, with regard to aphides, from the general law of reproduction. Don't however, imagine that she shrinks from the difficulty on account of the smallness of these animals. There are other animals which can only be distinguished with the assistance of a microscope, which, in this respect, come within the general rule. Notwithstanding the admiration which the study of insects must create, you must not let this admiration be exercised upon their greater or smaller size. Great and small are only such with relation to ourselves; and when we express astonishment at seeing a perfection in the organs of the invisible cheese-mite, equal to those of the ox or the elephant, it is a false feeling, arising from a false idea.

One of these aphides will produce nearly twenty young ones in the course of a day; that is to say, a volume ten or twelve times equal to its own body. A single aphid which, at the beginning of the warm weather, would bring into the world ninety aphides, which ninety, twelve days after, would each produce ninety more, would be, in the fifth generation, author of five billions, nine hundred and four millions, nine thousand aphides—which is a tolerable amount. Now, one aphid is, in a year, the source of twenty generations. I very much doubt whether there would be room for them upon all the trees and all the plants in the world. The whole earth would be given up to aphides; but this fecundity, of which there are so many examples in Nature, need not alarm us. One Poppy plant produces thirty-two thousand seeds, one Tobacco plant, three hundred and sixty thousand; each of these seeds producing in its turn thirty-two thousand, or three hundred thousand—would you not think that, at the end of five years the earth would be entirely covered with Tobacco and Poppies? A carp lays three hundred and fifty thousand eggs at once. But life and death are nothing but transformations. Death is the aliment of life. These aphides are the game that nourishes other insects, which in turn form the food of the birds we eat. Then we are returned to the elements, and serve as manure to the Grass and the flowers, which will produce and feed other aphides.

We need not go far to seek for the enemies of the aphides. Look! here, quite at his ease, on a Rose bud, is a little insect well known to children; it is shaped like a tortoise, and is about the size of a Pea. Naturalists call it a "coccinella," and children know it as the lady-bird. It is now innocent enough; but it has not always been so. Before it became possessed of its pretty form, and its polished shell of orange, yellow, black, or red, sprinkled with black or brown specks, it was a large, flat worm, with six feet, and of a dirty grey colour, marked with a few yellow spots. These worms, which issue from amber-coloured eggs, deposited by the female upon leaves, are no sooner born than they set out in search of aphides. When they have found a branch covered with game, they establish themselves in the midst of it, and are in want of no food till the moment they feel they are about to be transformed; then they attach themselves to some solitary leaf, and wait, in abstinence, till they become veritable lady-birds.

There would still be a superabundance of aphides if the lady-birds were their only enemies. But, do you not see, hovering over one of the Roses, a fly, whose two wings move so rapidly, that it appears motionless? You would not care to catch it, it so much resembles a bee, or, rather, a wasp. Its body is striped with yellow and black, but, instead of being round like the two insects you dread, it is remarkably flat; besides this, it has only two wings, and I do not believe that any two-winged fly has a sting. It does not



Mesembryanthemum testiculare (see p. 385).

seem to take any notice of the aphides which cover the branch near to it. It is a *parvenu*. It has forgotten the humility of its youth, when it had not its rich yellow and black vestments, or, more particularly, its wings. It was formerly a sort of shapeless worm, of a colour not at all striking, a dirty green, with a yellow stripe the whole length of its body. Placing itself upon a bed of game, this worm seizes the aphides, one after another, with a sort of hollow trident, through which it sucks them, taking particular care to reject the empty dry skin every time. One of these worms eats nearly an aphid a minute; as regards the aphides, the matter appears to be perfectly indifferent to them, not one of them is ever seen to make the least effort to avoid being eaten.

A Roman emperor, who found his end approaching, cried out, in allusion to the custom of decreeing an apotheosis to dead emperors: "I feel that I am becoming a god!" So there is a moment at which this worm feels that it is becoming a fly; and, like the lady-bird, it seeks a solitary place to prepare for this metamorphosis.

Here is a branch on which the aphides are only on one side; to-morrow there will be none at all; the reason of this is, that they are attacked by their most redoubtable enemy, an enemy which the learned and witty Reaumur called the Lion of the Pucerons. This is like the others, flat in form, and is of a cinnamon colour with citron-yellow stripes; it is much more voracious than the two other species of which we have spoken. If one of these worms, by mistake, happens to seize one of his brethren instead of an aphid so much the worse for his brother—it will eat him. It would be losing precious time to replace it upon a branch, and take an aphid instead of it. One can afford very little leisure for so much ceremony, when one has but a fortnight to eat all these fat aphides in! In fact, at the end of a fortnight, it forgets its appetite, and retires into a corner, shuts itself up in a shell of white silk, as large as a Pea, which it spins in a very short time. Three weeks afterwards, the shell opens, and there issues from it the most beautiful little creature you ever saw. It is a sort of large fly of a gay green colour, covered when it is settled, by long and large wings, of so fine a texture, that its body can be plainly seen through them. These wings, which are of a very pale green, present to the eye fibres, as it were, of a deeper green, which form a network more charming than that of the richest lace; on each side of the head is an eye of a fiery red colour, the splendour of which far surpasses that of precious stones.

The learned formerly found little bunches upon leaves, which excited their attention; these were stems as fine as hairs, supporting a small bud, white like themselves; at other times the buds were found open, like the chalice of a flower; the thing was declared to be a plant by the learned. The learned, however, were wrong; Reaumur made it clear that they were the eggs of that pretty fly, of which we have just spoken, before and after the birth of the worm which was afterwards to be transformed into a fly.

I was afraid but now, of seeing the aphides invade the whole earth; I at present begin to fear that there will not be aphides enough to feed all the insects to which they are assigned as game. Nature appears to have partaken of this second fear, and for this reason has suppressed the delays and formalities, ordinarily reputed necessary; aphides must be born, eat, and be eaten in a very few days.

But what is that black animal which is ascending the stem of the Rose tree? It is an ant; it climbs spirally, to avoid the thorns; there it is upon the branch that is covered by the aphides. Is this another enemy? Why, La Fontaine told you it fed upon worms and insects; there, it is upon them, but it does not devour them. As aphides eat, they secrete a sweet liquor, of which ants are very fond, and this one is come to regale itself—it is a little black milkmaid, who comes to milk some little green cows, which pasture in a meadow of the size of a Rose leaf.

There is a bee which has glided into a Rose; it is not long before it comes out again, and flies away; its hind feet are loaded with a yellow dust, which it has abstracted from the heart of the flower. That yellow dust, mixed with the honey which it disgorges, will be the paste destined for the worms which are to become young bees. Do not fancy, however, that this dust has no other destination. It is now time to speak of the loves of the Roses.

We will abstain from allusions to, as we said before, the apocryphal loves of the Rose and the butterfly. The butterfly who lights upon a Rose, seldom comes there for any other purpose than to deposit eggs; which will become caterpillars that will eat the Rose. The loves then, of which I will speak are real loves, and are the most charming in the world. Figure to yourself that all those Roses which bloom in the garden, pale purple or purple-violet, yellow or nasturtium colour, white, or mixed with purple and white, conceal from your eyes numbers of innocent loves.

The ancients placed Dryads and Hamadryads in trees; there are nymphs quite as charming in Roses. Let us go back to the Rose tree of the woods. Its flower is composed of five leaves or five

petals; in the middle are some delicate threads, supporting little yellow masses—these are the stamens; these threads surround a sort of little green egg, which is called an ovary, which contains the seed or grains. The grains are eggs, which the plants leave for the earth and the sun to hatch, as turtles do, when they deposit their eggs in the sand. The mass which surmounts the stamens is covered with that yellow dust with which the bee that has just disappeared over the wall had loaded its feet. Every grain of that dust is a skin which contains a much finer dust, which fecundates the pistil. When once the pistil fecundates, the nuptial bed is taken down—the leaves of the Rose fade and fall, one by one; the stamens become dry and disappear. The ovary enlarges, and becomes an oblong fruit of the shape of an Olive, green at first, then yellow, then orange, then scarlet; then, some day, the fruit bursts, and grains of a gold colour, containing eternal generations of Rose trees, fall upon the earth and there germinate. The double Rose is a coquette of an entirely unique species; you have read fairy tales, in which a magician changes into trees or flowers her rejected lovers; have we not, besides, in mythology, Daphne changed into a Laurel, Clytie into a Sunflower? Did not Narcissus and Adonis become flowers, to which they left their names? Well, every one of the Rose leaves (beyond five) which surround the nymph who dwells in the double Rose, is one of these lovers—each of the petals is made of one of the stamens that she had. Certain Roses are so double that they have not one stamen left, and then they never have any seeds.—"A Tour Round My Garden."

Old Seeds.—On a recent occasion, Mr. Niven, curator of the Botanic Gardens, Hull, lectured on "Seeds." He said they must look upon seeds as being nothing more than a matured ovum. The object of each seed was, of course, the perpetuation of the kind to which it belonged. There was a great deal of analogy between a seed and an egg. The outer coverings of seeds were not unfrequently beautiful when placed under the microscope. After giving a technical description of the outer coverings of seeds the lecturer proceeded to speak of their preservation. The egg, as all would know, had the power of vitality for a long time, and seeds would grow after being kept for a long period. He daresay most of them had heard of seeds that had been found with mummies having been sown and afterwards springing up, but such cases were not well authenticated. Farmers said that the Wheat known as Mummy Wheat was the same as that which was cultivated in Egypt thousands of years ago, but he thought it was only a popular fancy. He could scarcely say how long seeds would keep, but for their proper preservation they must be kept in Nature's own granary. In making railway embankments the soil that was turned out from 20 or 30 feet below the surface was often known in the following year to produce flowers, &c., that were at the present time unknown to the locality. The seeds had been deposited in the ground, and, therefore, kept in Nature's granary—kept away from the extremes of dryness and moisture, and from the action of light, and had consequently retained their vitality for an unknown period. To retain vitality four things were required, namely, moisture, heat, air, and electricity. One reason why seeds were placed in the ground was to preserve them from the action of light. The amount of heat required to support seed varied very much. Some plants known to them would vegetate with a heat slightly above freezing point, while other plants, such as the Palm, required a temperature of from 80° to 100°. At the freezing point vitality would not cease to exist in such, but it would become very low.

Parliament Square.—The necessity for the destruction of the shrubs and trees of the enclosures of Parliament Square, while the works of the railway company were being carried through them, has, according to the *Builder*, been but little required or compensated by the present flat arrangements of Grass-plats and beds, and the forest of surrounding lamps. Surely it would have been possible to have had raised beds of sufficient elevation for good shrubs to take root and grow, which would have formed admirable surroundings and backgrounds for the statuary presumably intended to be erected there; but which, however, will now have to be viewed in connection only with the prim formalities of "bedded-out flowers" one part of the year, and the empty bare earth the remainder. A little naturalness of shrub and tree is infinitely preferable to all this; and flowers then come in as pleasing adjuncts, but fail of effect when their repetition in profusion, and in set geometrical patterns, is the prevailing feature.

A New Grass.—*Ullalia japonica* is a perennial hardy species from Japan, with long variegated leaves. The flower-stems are from 3 to 4 feet high, very reed-like, and produce loose panicles of flowers; these panicles are hairy and erect until dried, when they become elegantly curled, closely resembling Ich dien feathers. It is a remarkably elegant species.

THE FRUIT GARDEN.

ON RENOVATING NEGLECTED ESPALIER TREES.

HAVING an espalier Apple Tree of the sort called Court Pendu-plat, that bore well, but had grown out of shape, I thought I might improve its appearance, and in time get finer fruit, by having it furnished with an entirely new set of branches. I commenced operations in the spring of last year by sawing off the four lower tiers, leaving only the two upper ones their entire length, and taking off the others about 4 inches from the stem. In this manner I secured the produce of the two tiers that were allowed to remain, and from which a large proportion of the fruit had of late been obtained. From most of the stump ends of the removed branches shoots very soon appeared, more than sufficient to form the new branches; these, as they advanced, were secured to some stakes driven into the ground near the main stem. In the spring of this



Fig. 1.

year I removed the second tier in the same way, leaving the top tier only to produce fruit. New shoots have grown from the stem and on the shoots of last year, and the tree now appears as represented in fig. 1. I intend this winter to make my selection among the new branches, the produce of this year and last; and, at the winter pruning of 1875-6, the tree should appear as represented in fig. 2, at which time the two remaining branches, if the new are beginning to be productive, might be removed. The advantages of proceeding in this way are obvious; the tree never ceases to bear crops, though for a time they may not be as abundant as if the tree had not undergone the operation; and by the gradual renewal of the branches and maintaining in each tier a just proportion in their length and thickness, the production of quite a model espalier will reward your labour in a very few years. Whereas, had the whole been removed at one time, and nothing been left but the

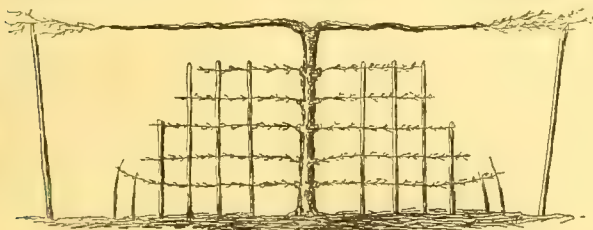


Fig. 2.

stem, all the largest and best shoots would have appeared at the top, and a battle between the tree and its owner—between Nature and Art—would have to be carried on for several years, and little or no fruit would be produced. As regards the retention for a time of the highest tier, it would be well to denude them gradually of their spurs and shoots, proceeding in a direction from the stem towards their extremities, allowing by this process all the light possible to the new branches beneath. Then, when the time comes for their entire suppression, they might be cut short off, either close to the new top tier, or at their junction with the stem; in the latter case, two new leaders, proceeding from the excision, would leave the tree of the same height that it was before the process of renewal commenced.

B. S.

RIPENING PEARS OFF THE TREES.

It is difficult to make some persons believe that, as a general rule, Pears should not be permitted to ripen on the tree. Of course, sticklers "for Nature as a guide," will try to argue the question whenever it is presented in this form, but the proof is to be found in the difference in Pears ripened by the natural and unnatural processes, if we choose to class them as such. Winter Pears and Apples do

ripen finely after they are taken from the trees, but I hardly think it will be claimed that these same varieties would be of better quality if grown where the season was sufficiently extended to admit of full maturity upon the trees. Our northern varieties of these fruits when cultivated in a southern climate, do not show any improvement in consequence of the change; and, further, the pomologists of the south, as well as those of the north, advocate house-ripening of Pears and late Apples. There are, it is true, a few varieties of our best Pears which appear to retain their good qualities if allowed to mature on the tree, but those are exceptions to the general rule. But this is not conclusive evidence that they would not be better if gathered before perfectly ripe. Of course, this early gathering of Pears is nothing new to experienced pomologists, but the masses do not appear to know anything about it, hence their neglect of this very important part of Pear culture, and the consequent failure to secure excellent fruit. I am reminded of this by seeing early Pears in my neighbours' gardens and orchards, as well as wherever I happen to travel through the country, all left upon the trees until they fall with over-ripeness. It is no wonder that we hear complaints of rotting at the core with such noble varieties as Flemish Beauty and Clapp's Favourite. The first, in particular, will show a splendid exterior up to the last moment if left on the tree to ripen, while from the centre out to within an eighth of an inch of the rosy cheek is a mass of rottenness. Out of more than a thousand varieties of Pears grown by "Moore's Rural New Yorker," we did not find one which was not better in quality when ripened off the trees than on it. The chemical changes which take place in the fruit during what is termed ripening appear to be more perfect if retarded than when hastened, hence the benefits of gathering early and placing where the process will proceed slowly. We have many varieties which, if allowed to ripen on the tree, have a coarse gritty flesh, but become mellowed and softened, or, as the pomologist would say, "buttery," when ripened in the house.

When to Gather Pears.

It would be difficult to designate the exact time when any particular variety should be gathered, for it is the conditions which must govern in these matters, and they vary with the seasons even in the same locality. A little observation and experience will usually enable one to come near enough to be successful. When a few of the earliest matured on a tree begin to change colour or drop off, and the stems of those which are still green will part readily from the branch when lifted, it is time to gather all. Perhaps there is no surer method of determining maturity than the free parting of the fruit stem from the spur on which it grew. If the stem adheres so firmly that it will break, then the fruit is not sufficiently mature for gathering.

Preserving and Ripening.

In gathering, considerable care is required to prevent bruising, because Pears will not withstand as rough handling as Apples, for a bruise is usually followed by rapid decay. Every specimen should be picked by hand and laid into baskets, not dropped, as though they were cobble stones or Potatoes. When gathered, place in a cool room or cellar in baskets, boxes, or barrels, allowing free ventilation for two or three days; then pack in tight vessels, but not larger than barrels, leaving the heads open or merely laid on loosely for a week or two longer if the variety is a late one, and it is desirable to keep them as long as possible, remembering that slow ripening will bring out more fully the good qualities than rapid; consequently a very cool place is preferable to a warm one. If spread upon shelves in a light airy room or cellar, shrivelling and decay will soon destroy the best and longest-keeping sorts. I have found tight boxes, like the common cheese box or half-barrels, with light fitting covers, very handy and excellent for keeping early or late varieties. For winter sorts, like the Vicar of Winkfield, Laurence, and Duchesse, it is an excellent plan to wrap each specimen in tissue paper when packed away for one's own use. By an occasional examination of the top layer the condition may readily be determined, and when ripening is desired or delay is no longer safe, the specimens, or those wanted for immediate use, should be taken into a warm room—for instance, the kitchen closet—but still kept in a tight drawer or box. A week in such a position will increase the sugar in almost any variety, perhaps, fifty per cent. I know that some of our pomologists would smile at the idea of the Vicar of Winkfield Pear being a good dessert variety; but if they will start with well-grown specimens in the fall, keep them in a cool place until January, or even later, then ripen them up in a warm room slowly, they might find occasion to change their minds in regard to quality. But if ripened hastily it is poor enough and valuable only for cooking, and the same may be said of many other popular sorts. From long experience I have learned that to obtain a good crop of Pears is but half the battle; they often require careful manipulation in order to get the most satisfaction out of them, and equally as much skill as in the production.

The Best Covering for a Vine Border.—In answer to your correspondent (see p. 313), I would say that wood no doubt makes the best and cheapest covering, but shutters of it should not be made in the old imbricated way, as, when so constructed, they are too cumbersome and heavy. I have used wood covers, light and simply made, for many years, and they answer well. The boards are cut rather over a quarter of an inch in thickness, and of the lengths required; they are then nailed on to ribs lengthways, but the ribs are all scooped out, as here represented. The boards then become furrowed, and carry off the water easily. They are raised at the top on props or on flower pots, so as to give them an easy inclination towards the front and to allow air to circulate freely over the border



Scale, 1 inch to the foot.

below them. When the covers are taken off in spring they are gas-tarred over and put away one on the top of the other; used in this way, with care, a set of board covers will last for twenty years.—*WILLIAM CULVERWELL, Thorpe Perrow, Bedale.*

Prune Often.—As most persons do their pruning in the spring of the year, before other work fully engages their attention, this practice seems to have almost established itself without so much as a question as to its propriety in any other light than that of convenience, occupying leisure time, and getting the brush off the ground before it is otherwise occupied. But, assuming that this parcel of ground has been set apart for fruit raising, we will discuss the subject only in reference to this end. In young orchards, where the growth of the tree is the leading object, the early part of the spring is perhaps as good a time as any, but young trees should be pruned oftener than once a year, in order that the growth may be conducted in the desired direction. It is very improper to allow a thrifty young tree to make a full year's growth on one side only, and then, when spring comes, to rob it of all its progress; and this too often proves to be the case when pruning is done but once a year. For example, take a tree that has grown its branches heavily to one side. Cut back these branches in early spring, and, by the time the tree has fully commenced its summer's growths, you will find another leader already advancing in the same direction, which, if left alone, will again lead the principal part of the year's growth to be cut away by the saw and lost. To avoid this, every young orchard should be carefully examined by some capable person several times throughout the growing season, those false leaders headed back, and a uniform growth encouraged until the proper direction has been given to the growth of the young tree. In order that the great importance of this repeated pruning may be felt by growers, I will enumerate some of the benefits attending its neglect, which are of so common occurrence that you cannot fail to notice them. Prune often and carefully; shape your trees according to the most approved plans, and avoid the necessity of losing the growth of your trees by heavy pruning, or causing disease and "sores" by severe pruning. Thinning for the present crop, then, ought to be done in June, or after the fruit has set, for which I give the following reason. A tree in vigorous growth of wood seldom produces much fruit, and, if pruned while it is yet dormant, the propelling current which the roots send forth, being confined to a reduced number of branches, accelerates its growth of wood, and causes a greater proportion of blossoms to wither without setting fruit; but, if pruned after the fruit has fairly set and is beginning to draw upon the sap of the tree, this increase of force will at once supply the want, and a good healthy crop will be secured. In conclusion, I would say:—For a growth of wood, prune while dormant. For a present crop, prune in June; and for a prospective crop, late in August or first of September.—*Rural.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Up a Tree.—There is a Currant bush at Rochester, N.H., which, though growing among the branches of an Elm 20 feet from the ground, has borne well for more than a dozen years.

Orchard-house Plums.—Amongst the orchard-house trees in Mr. Wilson's garden at Heatherbank, is a pot-tree of *Cydonia Golden Drop* Plum which is quite remarkable. The entire crop brought to maturity was 212 fruits. It should be added that these are not dry, staveling fruits, but full-sized, succulent, high-flavoured examples of the variety, which is well-known to be one of the best Plums in cultivation.—*Floral.*

Fruit Trees with Low Branches.—Train your Pear trees for garden use that they will branch at a distance of 1 or 2 feet from the ground. The advantages are as follows:—1. It is easy to trim. 2. It is easy to gather the fruit. 3. Falling fruit is little injured. 4. The branches being sturdy, will not be strained by great weight of fruit. 5. Soil will be kept moist. 6. The trunk will be protected from the scorching sun. 7. Trees thus trained are more beautiful.—*Horticulturist.*

THE CHELSEA BOTANIC GARDEN.

FEW London gardens are better worth visiting than this. The exact date of its formation does not appear to be precisely known, but it was, doubtless, a garden of some note in Gerard and Parkinson's time. It is situated in one of the oldest parts of Chelsea, on the banks of the Thames, from which it is now separated by the new embankment. It was presented by Sir Hans Sloane to the Apothecaries' Company sometime about the latter end of the seventeenth century, and on the garden walls near the entrance gate, we find the inscription, "*Hortus Botanicus Societatis Pharmacuticæ Londinensis, 1688*," a date probably indicating when the walls were finished; for we have ample proof that the garden existed long before that time. Independently, however, of its historical associations, the garden is well worth notice on account of the fine collection of medicinal plants which it contains. In the centre is a circular basin surrounded by rock-work, well clad with hardy plants and creepers; here, too, are planted masses of Yuccas, which are extremely effective when in bloom in summer. In the tank, white Water Lilies grow and flower as freely as if in a clear stream miles away from the dust and smoke. I have before alluded to the readiness with which this and other beautiful aquatics luxuriate in town gardens, a fact worth the remembrance of those who have charge of the ornamental waters in our parks. If I recollect rightly, Battersea is the only park near London in which aquatics are grown, and even there their cultivation might be extended with advantage. All who have seen the interesting pond devoted to aquatic plants in the Botanic Gardens at Edinburgh, where the fragrant *Aponogeton distachyon*, pearly Water Lilies, and scores of other rare or beautiful water or marsh plants are grown in perfection, will readily agree that they deserve more general attention than they at present receive in our gardens, both public and private. In the Chelsea gardens there is a good collection of herbaceous plants, more especially those belonging to the Umbelliferous order, and also of hardy bulbs. Among Yuccas, too, I noticed fine specimens of *Y. flaccida*, *Y. gloriosa*, and *Y. recurvata*, all kinds well adapted for town gardens, to which they give a kind of semi-tropical appearance. Among trees, the old Cedar of Lebanon, which has served as a conspicuous landmark from the river for so many years, now shows symptoms of decay, a misfortune, doubtless, in part, attributable to loss of moisture at the root, occasioned by the formation of the new embankment. This fine old remnant of bygone days was, probably, in its prime in Elizabeth's time, when Westminster was comparatively a village separated from the city by green fields, and when gardens and orchards existed in Holborn, Long Acre, and all along between the Strand and the river. The companion Yew to the one now standing died some years since. There is also a splendid Plane tree at one corner of the garden still in vigorous health; and among smaller trees are good examples of Mulberries, *Broussonetia papyrifera*, and *Koeleria paniculata*, the last having produced here ripe fruit, a somewhat rare occurrence in this country. Of this tree there is a specimen at Linden House, Tarnham Green, nearly 50 feet in height. The Maiden-hair tree (*Salisburia adiantifolia*) grows tolerably well at Chelsea; while, on an old wall, is a well-developed Pomegranate, which covers a space of 30 or 40 feet with fresh green foliage. *Clematis vitalba* may be seen here clambering up some of the trees to a height of 20 feet, and during the flowering season wreathing them with snowy blossoms. The Wistaria, which is one of our best balcony and portico plants, succeeds admirably here; of this there is a specimen growing in the form of a bush on the open lawn in the Jardin des Plantes at Paris, and I have also seen it grown in that way with good effect in this country. The curator's residence is pleasingly draped with Ivy, not closely trimmed, but growing in a natural manner—here nestling close to the wall, there hanging in graceful masses, concealing the unsightly asperities of the builder. Green and variegated Ives are here intermixed, and, to add to the effect, patches of the variegated *Euonymus* shine like burnished silver among the deeper green of the Ivy; and here and there, too, are brilliant scarlet clusters of fruit furnished by *Pyracantha japonica*. The new Japan Creeper (*Ampelopsis tricuspidata*) may also be seen here clinging close to the masonry—even closer than Ivy itself, and its leaves are now of a beautiful rich bronzy-crimson. In a convenient little propagating-house here, we noted two or three of the rarer Selaginellas growing freely, and at one end of the bed the old *Torenia asiatica* was blooming freely. A plant or two of the small white-flowered *Passiflora foetida* is worth notice on account of the great beauty of the fresh green mossy involucre which surrounds the base of its apple-green fruits; in a small state this plant is very interesting. This house is devoted to the reproduction of such tender plants as are required for the larger houses, and appears to be well fitted for its purpose, although limited as regards size. It is sunk two or three steps below the ground level, a position which is warmer and more moist and genial than one wholly above ground. One of the

houses on the west side of the garden is devoted to hardy and half-hardy decorative plants, among which may be found grand masses of the rarer British and North American Ferns, including *Osmundas*, and some of the best forms of Lady Ferns. These are planted out on artificial rock-work, which, in places, is carpeted with the fresh green Cornish Moneywort (*Sibthorpia europæa*), and other dwarf trailing plants. The narrow-leaved *Ophiopogon jaburnum* does better in this garden than in any other with which I am acquainted, producing annually an abundance of bright-purplish-blue Muscari-like flowers. With these are associated some nice bushy specimens of *Skimmia japonica* and *S. oblata*, both profusely covered with bright scarlet berries. In the large oblong span-roof house, near the centre of the garden, is a splendid specimen of *Monstera deliciosa*, a tropical fruit-bearing plant, rarely seen except at Kew, Chatsworth, or similar great places. This plant is of large size and is growing over a tank, into which its long thong-like roots descend in quest of moisture. It is now bearing several fruits in different stages of maturity. The plant itself is tolerably well known, as it has been frequently used in the London parks as a sub-tropical plant during the past few years, and a few weeks ago we alluded to a specimen growing and flowering vigorously in a large tub in front of a shop in Lowndes Square, where its singularly slit leaves and great white flowers attracted considerable attention from passers-by. A large span-roofed house, to the right of the curator's residence, contains some very interesting plants. Here, as elsewhere, are some fine masses of the blue-flowered *Ophiopogon*, a fine specimen of the elegant light green *Bambusa gracilis*, one of the most pleasing of all foliage plants for a cool conservatory or winter garden; while at one end of the house is a plant of *Ruscus androgynus*, the young shoots of which resemble *Asparagus*; its great pinnate coriaceous leaves last for several months in a drawing-room vase, if washed occasionally in clean water to clear them from dust. The front division of this house contains an interesting collection of *Agaves*, *Aloes*, *Gasterias*, *Hawarthias*, and other rare and curious succulent plants, among which there is a fine plant of *Aloe fruticosa*; and here also the orange-striped *Abutilon striatum* flowers freely. Associated with these are also fine masses of *Crassula lactea*, which is one of the best of all winter-blooming succulents. It grows freely in a cool greenhouse, or even in a window, and well deserves a place in the most select collection of decorative plants. To the west of the curator's residence is another span-roofed house, also planted in a natural and artistic way. The back wall is covered with *Ficus repens*, which occasionally sports into a large-leaved form closely resembling that known as *F. barbata* in some gardens. Here is also a good specimen of *Dicksonia medullaris*, with its characteristic black rachis and ample fronds; and the great mealy-leaved *Aralia papyrifera* produces gigantic leaves in this house, some of them being 2 and 3 feet in diameter, and of great substance. The recesses in the rock-work are densely carpeted with fresh green *Selaginella* and small Ferns, while from the roof hang masses of the pale blue *Plumbago capensis*, laden with great clusters of its beautiful but somewhat fugacious flowers. The planting-out system, as here adopted in two or three of the houses, well deserves attention, as much less trouble and expense suffice to keep the whole in perfect order than are required where plants of all kinds are grown in pots. Even the saving of time in watering alone is a consideration here as well as in most other places, and there is no comparison between strong-growing subjects when planted out and when cramped in pots.

B.

Keeping Nuts.—Mr. Laxton, of Stamford, describes, in the *Journal of Horticulture*, a simple method of keeping Nuts. "I have sent you a sample of Cob Nuts which were gathered dry last October, spread out in the sun for a few hours with the husks on, and then packed in a box in layers with half-rotted cocoa refuse about as moist as ordinary potting soil; the whole well pressed down as packed, and kept in a cool wine cellar. I have followed this plan successfully for several years, and have found the flavour of the Nuts so preserved to be excellent. When they are required for use all that is necessary is to take out the quantity desired, and again press down closely the remainder. The Nuts, when taken out should be slightly dried in the air, and the refuse will then shake out and leave the Nuts clean and equal to those fresh gathered. Walnuts should be husked and dried for a somewhat longer period in the sun before being packed. Nuts without the cocoa refuse, but otherwise similarly and concurrently treated as the sample sent you, are now all bad. It is advisable not to have to refuse too moist, as, on one occasion, from this cause, I found a perfect forest of miniature Filbert and Walnut trees in my cellar in the spring after the Nuts were stored, the whole having vegetated at the growing period. The method is cleanly, and the refuse does not impart an earthy taste, as in the case of Nuts kept in the ground."

THE KITCHEN GARDEN.

POTATO CULTURE IN THE NORTH OF ENGLAND.

THE whole of my Potatoes were taken up this year by the middle of September. Last year I used Fowler's patent manure and long litter, which produced good crops tolerably free from disease. This year I have used long litter and a sprinkling of Gibbs's guano; but, although I have had excellent crops, the roots did not derive much benefit from the guano, on account of the severe drought which prevailed for about sixteen weeks. I did not plant until my usual time (the first week in April), and then only first early varieties, such as *Mona's Pride* and *Headley's Nonpareil*; all my other varieties were planted from the middle to the end of April, which is considered in Yorkshire the best time. Experienced Potato growers always hold that nothing can grow until there is natural heat in the land, and they are right; the late-planted varieties escaped being cut down by the severe frosts which occurred on the evenings of the 16th and 17th of May. My early varieties, along with my neighbours', were cut down, and, consequently, yielded smaller tubers than usual. In the northern counties we are never safe from frosts until after the 20th of May. It is not generally known that *Headley's Nonpareil* (one of the finest-flavoured Potatoes known) is an early variety, coming into use soon after *Mona's Pride* and other first early varieties. There are many early varieties with purple sprouts, such as *Myatt's Prolific*, *Rivers's Royal Ashleaf*, &c., which are classed as first earlies, but I never yet found any of the purple-sprouted Kidneys to produce a dish of Potatoes so early as the white-sprouted ones, both sorts being treated alike as to the day of planting, and having the sprouts also of about an equal length when planted. The length of the sprout, at planting time, has a great deal to do with early production—for instance, plant the old *Ashleaf* or *Mona's Pride*, with their white sprouts only just peeping from their eyes, and plant *Myatt's Prolific* on the same day with well-developed sprouts, about an inch long, well hardened and greened, so that you can roll them about without fear of breaking off the sprouts, and you will find *Myatt's Prolific* ready for eating, before the white-sprouted *Ashtop* kinds. Plant them both on one day, with sprouts of an equal length, both hardened alike, both having received the same treatment, and you will find the white-sprouted *Ashtops* the earliest by a fortnight. I find *Headley's Nonpareil*, which is related to the *Lapstone*, to be about as early as *Rivers's Royal Ashleaf*. *Headley's* can be eaten from August to February, about which time it begins to sprout freely, and seed of it then wants exposure to keep the sprouts from getting too long; for, it is an ascertained fact, that none of the *Kidney* section, whether of the early or late varieties, ever do well for a crop if the first sprout is lost, either by accident or design. Round Potatoes will bear rougher treatment than Kidneys; they may be sprouted without suffering so much, but it is always wise to secure the first sprouts, which are much stronger than those that appear afterwards—better haulm, and a heavier crop is the result. This year I have lifted fine crops of the *America* varieties quite free from disease. The *Early Rose*, *Late Rose*, and *Vermont Beauty*, are really good, and worthy of a place in the best gardens. *King of the Earlies* and *Climax* are the best in point of form, but the flesh of both is often hard and flinty; they are sorts that will not suit the English palate. *Climax* is often much diseased, but, *King of the Earlies* is nearly always lifted in a healthy state. In Yorkshire the Potato crops are good, a few kinds only being slightly diseased. In Worcestershire the disease has shown itself somewhat plentifully, and many growers are selling their Potatoes as fast as possible; in some cases at 6s. a bag. The *Lapstone* section, especially the late sorts, always commence supertuberating first; the quality of the crop is then injured, and the tubers, instead of being mealy, become hard and flinty. The second earlies of the *Lapstone* section are therefore the best kinds to grow, as they ripen by the end of July, or very early in August, before autumnal rains set in, and before disease begins to show itself. The best sorts proved here this season, have been *Early Rose*, *Late Rose*, and *Vermont Beauty*, all American red varieties, the last yielding a heavy crop. Amongst the *Lapstone* section, *Headley's Nonpareil* and *Beaconsfield* have been good, both ripening off by the end of July. A round white variety which has been grown in this district upwards of seventy years, called the *Old American*, has yielded a very good crop free from disease; it is of fine healthy quality, its flesh is white, and it ripens by the end of July. Although it has been grown for so many years, it is still as vigorous as ever, completely upsetting, in this respect, the wearing-out theory. Indeed, the original *Lapstone* at *Jervaux Abbey* is in no respect impaired in health, although the seed from which it is grown has never been changed for thirty years. This year, I grew 2 pounds of *Vermont Beauty*, and the crop, when lifted, weighed 64 pounds of very fine Potatoes—handsome and good. The tubers were of large size, the

heaviest weighing 1 pound 6 ounces; they are rough in the skin, which is a certain sign that a Potato is mealy; they become ripe enough to be lifted early in August, before disease sets in. Those who wish for a higher class Potato must grow the Lapstone section, in which may be enumerated Haigh's Seedling (Cobbler's Lapstone), Yorkshire Hero, Pebble White or Crystal Palace, Headley's Nonpareil, Huntingdon Kidney, Perfection, Rixton Pippin, Ashtop Fluke, Taylor's Yorkshire Hybrid, Beaconsfield, and Taylor's Alexandra Kidney (not yet sent out). These are all good croppers, but subject to disease. Headley's Nonpareil, and Beaconsfield, are amongst the best, and also the two earliest. There is another class of Potatoes which, on account of their vigorous haulm, are only fit for field culture. These consist of Red Skin Flourball, Victorias, the Red Fluke, and others, all, however, profitable in the market.

As regards culture, I find Potatoes to succeed best where the land has been manured and roughly turned up in the autumn, so as to leave it exposed to the mellowing influence of frost. Early in the spring it should be forked over again, in order that the manure may become thoroughly incorporated with it. Round Potatoes may be planted with the dibble, but Kidneys do best planted in trenches about 4 inches deep; the sets being 1 foot apart, and the rows 2 feet asunder; place some straw litter over the set to act as drainage, and then add a slight sprinkling of guano, sulphate of ammonia, nitrate of soda, or, indeed, any of the new artificial manures, but good guano is, I think, the best; then rake all level. As far as expedition is concerned, no tool is so good for this purpose as a common wooden rake. I plant my late and second early kinds in March, if the weather is favourable; I never plant first earlies until the first week in April, should they begin to peep through the soil, I cover them up with the hoe, and keep them covered as long as I can, in order to escape frost. I do not advise very early planting with the view of getting an early crop, except where one happens to have a nice snug warm nook, well sheltered from the north by a wall or high hedge. A cultivator in the Isle of Man produces early Potatoes as follows:—Early in November he removes his Cucumber frames to an eligible situation. He mixes up the old hot-bed manure with some fine soil, fills the frames about half-full of this compost and then plants a few nicely sprouted Mona's Pride Kidney; he covers up every night with mats, and on favourable days gives a little air. In February the haulm gets long, being drawn by the glass, when he prunes it back considerably, and in March the tubers are ready for eating. Let us now examine the different varieties of Potatoes grown here, this year, seriatim.

Mona's Pride.—This Ashleafed variety, with a white sprout, is now well known, and, if the true sort is obtained, it is one of the best of croppers, well flavoured, and mealy. It was a little diseased this season, and the tubers were small, having been cut down by frost. The haulm died down naturally in July.

Early May.—This is a very early variety, with white sprouts, prolific and good, each root yielding from twenty to twenty-six tubers. Both this and the preceding have shining green leaves, and are distinct from the Myatt's strain. It was cut down by frost; still it yielded a very nice crop. Haulm dead by the end of July.

Vermont Beauty or Brownhill Beauty.—This is a new American variety, that was sent out by English seedsmen this spring. The tubers cluster together near the base of the stem and the surface of the soil, yet not so near as to protrude and become green. The haulm, even when grown in rich soil, does not exceed 18 inches in height. It is a second white-fleshed early of excellent quality, and boils very mealy—a grand variety for roasting as well as boiling. It obtained a first-class certificate, after being grown for trial, at Chiswick.

Early Rose.—This is another American variety, now pretty well known, and one which produces excellent crops in most soils. Its flesh is white, and, when ripe, quite mealy. The haulm is short, and it is a good cropper, coming in soon after the Ashtop section; it is a variety that does not readily become diseased, and, on this account, I consider it valuable.

American late Rose.—This is an excellent sort, and a good cropper, from eight to ten large tubers being often produced by one root, and often more, some of them weighing upwards of 1 lb. each. The produce of each root averages from 3 to 3½ lbs.; it is a second early, and can be lifted for storing by the middle of August. It has obtained a first-class certificate.

Red Fluke.—This Potato grew away nicely with me up to the first week in August, when I thought it was going to ripen off, but no sooner had rain come, than the haulm again began to grow, and it is now from 5 to 6 feet long, and the crop is supertuberating. I have lifted a root this day (7th October), and have found forty Potatoes attached to it, weighing 4 lbs. Half of them, however, were deformed and unshapely.

Alma Kidney.—This nice white Kidney, was planted on the 20th of April, and escaped being cut down by frost in May. It quickly forms tubers, of which I took up a dish on the 29th of June. The haulm is of moderate growth, and the tubers are formed at the ends of wiry-looking roots, but do not come through the soil; it is of good quality, free this year from disease, and a moderate cropper.

Headley's Nonpareil.—I find this to be one of the best of early white Kidneys. I planted it the first week in April, and took up a boiling on the 22nd of June, when the tubers were as large as a hen's egg. The haulm is not unlike that of Rivers's Royal Ashleaf. It boils white and mealy, and possesses the best flavour of any Potato grown. It belongs, as I have said, to the Lapstone section, of which it is the earliest. It is a moderate cropper, and invaluable for winter use from August up to February. The tubers, which are smooth and handsome, do not grow to a very large size, but there are plenty of them at a root.

Yorkshire Hero.—This is another of the Lapstone section, and a good cropper in light sandy land, but in many places subject to disease. It is of the finest form and remarkably good in flavour, mealy and nutty. With me it has supertuberated, and is a little diseased.

Rixton Pippin.—This is one of the newer varieties belonging to the Lapstone section; its tubers are large, smooth, and handsome, mealy and nutty in flavour. It is slightly subject to disease, as, indeed, nearly all the Lapstone section is; each root produces, on an average, from 3 to 3½ pounds. I have now grown it for four years and find it to be good and an excellent keeper.

Alexandra Kidney.—This is a cross between the Round Ash-top, or Fox's Seedling, and the Yorkshire Hero. Its tubers, which are well flavoured and handsome, ripen in August.

Red-skinned Flourball.—This is a late variety, liable to supertuberate, but excellent in winter and spring. With me, it has only slightly diseased this season. It is best suited for field culture.

Rivers' Royal Ashleaf.—This comes into use in Yorkshire about ten days or a fortnight after the first earlies, and it is rarely diseased. Its only fault is being yellow-fleshed.

After having proved all the above-named varieties, and others, for a small collection, I would recommend the following: Alma Kidney, Early May, and Mona's Pride, for the first earlies; Early Rose and Headley's Nonpareil, for succession and for autumn and winter use; the Late Rose, Vermont Beauty, Beaconsfield, and Rixton Pippin, all kinds that are sure to give satisfaction.

HENRY TAYLOR.

The two Carpets.—About three years ago I purchased an old carpet to place in my studio, as I call an apartment tolerably well furnished, in which I sometimes shut myself up, to prevent interruption whilst I am doing nothing. This carpet represents foliage of a sombre green, strewn over with large red flowers. Yesterday my eyes fell upon my carpet, and I perceived that the colours were becoming very faint, that the green was getting of a very dingy hue, that the red was faded in a deplorable manner, and that the wool was worn off, and showed the string over the whole space that led from the door to the window, and from the window to my arm-chair in the chimney corner. That is not all; whilst moving an enormous and heavy table of carved wood, I made a rent in the carpet. All this disturbed me so much, that I immediately had the rent repaired, but I could neither restore freshness to the leaves nor brilliancy to the red flowers. But this morning, whilst walking round my garden, I stopped before the Grass-plot which is nearly in the centre of it. Now here, said I, is just such a carpet as I like, always fresh, always handsome, always rich. It cost me sixty pounds of Grass seeds, at 2½d. per pound, that is to say 12s., and it is about the same age as that in my closet, which cost me £12 10s. That which cost £12 10s. has undergone sad changes; it is now poor, and becoming poorer every day, in its tarnished splendour, threadbare, disgraceful and patched; whilst this before me becomes every year more beautiful, more green, more tufted. And with what profuseness of beauty it changes and renews itself! In spring it is of a pale green, strewn over with small white Daisies and a few Violets. Shortly after, the green becomes deeper, and the Daisies are replaced by glossy Buttercups. To the Buttercups succeed red and white Trefoil. In the autumn my carpet assumes a yellow tint, and instead of the red and white Trefoil, it is sprinkled with Colchicums, which spring from the earth like violet-coloured Lilies. In winter its white snow dazzles the eyes, as it has been danced and walked over. Then, although in the spring, as well as the autumn, it is a little worn and ragged, it puts itself to rights in such a manner that we cannot perceive its wounds, or even its scars: whilst my other carpet remains there with its eternal red flowers, which become more ugly every day, and with its badly-mended rents.—ALPHONSE KARR.

RIVER-SIDE GARDENS.

In a river and streamlet-seamed country, like the British Isles, the opportunities for making charming and most varied river-side gardens are many, and should be taken more advantage of. Some of the most beautiful scenes in British gardens are those on the banks of rivers, as, for example, those at Curraghmore, Cliveden, Bothwell Castle, and many other gardens; indeed, they might be named on the banks of almost every British river or stream. It behoves us, then, to bear in mind a few principles in dealing with this description of garden scenery, never forgetting, however, that the variety of situation and local peculiarities are so infinite that novel combinations may be made in almost every instance. As a case where little or no attempt has been made to combine garden with river beauty we may instance Kew. An important point is also well illustrated at Kew, and that is the mistake of forming a poorly-designed artificial lake near a noble river. Where a fine river exists

their beauty. There is a river Thames in Canada West, on the banks of which the writer saw the only tree pictures he met with in that part of America. That group of trees, seen across the busy reach of water, would never have attained half their full spread of branches had they been crowded in a wood; nor could we, in that case, see the noble wall of foliage standing defined against the blue sky, swelling forth into beautiful rounded, yet varied, forms, unrestrained only by the powers of growth of each tree. In fact, the river gives us a precious vista and tree picture-gallery, so to say, which cannot be foolishly destroyed by being dotted over with trees and shrubs at regular intervals; however, we are not absolved from the necessity of securing those quiet open carpets of turf, which are so essential elsewhere. In planting, it is the fashion to plant certain trees near rivers, and no doubt they are suitable for the position, but there should be no such limitation. In many cases



River-side Garden Scenery.

the wise gardener will create as much beauty on its banks as is possible, and not attempt to form within a stone's-throw an artificial pond, which, except thoroughly well done, must look more absurd than usual beside the natural water. Sometimes, in the case of a small river or stream, improvement may be made by widening the bed, or by so damming it that a handsome sheet of water is formed; but this is quite a different proceeding from what has been done at Kew, where a very poor piece of artificial water has been made on the banks of the Thames. River-banks offer grand opportunities to the planter; even Nature herself takes advantage of them to show some of her finest sylvan effects. Thus, in parts of North America, where the trees stand thickly, it is on the banks of rivers you will frequently find the finest trees and the most beautiful tree pictures. This is not because there is abundant water and rich food thereon; there is space for the trees to develop, and a foreground which permits us to see

there is high and dry ground, as well as moist, near the river, and where this is the case, most kinds of hardy trees may be grown successfully. There are, however, some neglected and rare trees, like the Nyssas, which would thrive well very near the water; and there is some reason to fear our system of thoroughly draining the land will some day leave us with only the river-side as a suitable position for the many trees that grow naturally best in a moist soil; of such there are a great many more than is generally supposed. The views in river-bank plantations are often very fine, if they are well managed and kept open; frequently the removal of a few trees may open a charming vista. Mr. Fleming has at Cliveden made some delightful ones. There is no better position than the river-side for the more picturesque arrangements of hardy plants; and, as a rule, all in the neighbourhood of a river or stream should be treated in a purely informal and easy style. All walks by the margin should be avoided as much as possible.

OUR RAILWAY BANKS AND SLOPES.

SUGGESTIONS FOR TURNING THEM TO A MORE PROFITABLE ACCOUNT.

[As you have lately published (see p. 265) a note from Mr. Moggridge on the planting of railway embankments, I venture to send you a copy of a paper of mine on this subject, written some years ago. JAS. M'NAB.

Royal Botanic Gardens, Edinburgh.]

Anything that can be suggested for the ornamentation of railway embankments ought not to be lost sight of. It is, perhaps, rather unsafe ground to work upon; still, with due amount of caution, aided by a slight but judicious fencing, difficulties may be overcome. On those slopes where the gradient is not too steep, a great deal could be accomplished. Year by year travelling on our railways continues to increase, while the majority of these travellers, particularly during the summer and autumn months, resort to them for pleasure. The eagerness, therefore, to see all that they possibly can of the surrounding districts, and that, after allowing themselves but a limited time, renders the anxiety to catch a glimpse of everything keener than ordinary.

Trees near Railways.

It is impossible to make all railway banks pleasing to the eye; still much may be done to render them infinitely more attractive than many of them now are, and for this end we think that a reasonable amount of ornamentation may be advisable. As all countries are nearly alike with regard to railway banks, any remarks suggested for one may prove applicable for others. It may be advocated, that to sit and look out of a railway carriage window is a strain upon the eyes, and ought to be avoided as much as possible. This is all very well for those parties constantly travelling on the same line, but, for *bonâ fide* travellers, whose object is to see all that they possibly can, such advice would scarcely be regarded. Where the strain on the eyes is found to be greatest is when running through forests of trees, where stem after stem seems as if passing in rapid succession, and all perhaps in a continuous line. If the neighbouring proprietors could be induced to thin out such masses of trees, so as to leave them in a sort of waved belt, having Grass between them and the rails, the nearing and distancing would take off that peculiar feeling which is experienced when passing through what has been a forest of Scotch Fir, Larch, or Spruce, growing on level ground. Trees should in no case be near railways; they are apt to be blown down, and fatal consequences might result from such unforeseen and simple causes. Branches also may be blown off, and get into positions capable of doing much mischief. In many parts of the country the proximity of trees to railways cannot be avoided. In numerous districts we see crowds of ill-grown deciduous trees running parallel to the rail, being portions of previous forest land. In such places the removal of all the useless and unshapely trees should be kept in view, leaving only one or two at such distances that no evil could happen, even in the event of their being blown over. A little fresh soil put on the surface of the ground round the roots, after such thinning takes place, would enable those left to take firmer hold of the soil, and thus throw greatly increased vigour into their tops, besides being the means of rendering them more pleasing in the landscape. Few objects are more delightful to the railway traveller than to see the entire outline of a well-furnished tree when so isolated.

Telegraph Posts.

In many districts, and in various parts of the kingdom, great disfigurements are committed on those trees bordering railway banks, caused by the introduction of telegraph wires. Such means of communication must go on; but in many instances it would be far better to cut the trees down altogether than to lop off the branches close to the stems, as is done in some places to a large extent, and that up one side of the trees, in order to prevent their interfering with the telegraph wires, thus rendering many of them absolutely hideous. In some of the northern districts of Scotland, a considerable number of beautiful Birches have been so mutilated, when their entire removal would have been infinitely better, and have been the means of bringing into view distant Birches, whose outline would be more agreeable to look upon, and beyond the chance of interfering with telegraph wires. On nearly every line such mutilations, both on rail and road, are not unfrequent. Telegraph posts themselves, when standing close together, are by no means pleasing objects, passing them as we do in rapid succession. In some districts, such posts stand at much longer distances, and are, therefore, less offensive. The exact result of such distances must now be well ascertained, and if it does turn out that extra strength at greater distances is preferable to smaller posts placed nearer to each other, the greater distances ought in all cases to be adopted, particularly when a renewal of posts has to take place; and, if so arranged, they would prove

infinitely more agreeable for railway travellers. It does seem surprising that with all the ingenuity and forethought displayed in railway matters, telegraph communication should remain much the same as when first constructed, subject as it is to so many accidents, more particularly from the posts being frequently blown over, and also injured from underground decay.

Necessity of Additional Planting to Supply Telegraph Posts, &c.

Judging from the number of these posts annually required, to say nothing of railway sleepers, it is certain that planting is not going on at a sufficient rate in order to meet the increased consumption which must be required by the extension of railways. The Royal Commissioners have done much in this country by encouraging drainage, so as to improve the land for agricultural purposes; they ought also to foster drainage more than hitherto for planting purposes, to enable generations yet to come to be provided with means to meet the constant and increasing demand which must occur both for telegraph posts and railway sleepers. Much comparatively waste land exists throughout the three kingdoms, which, if properly drained, might be turned to good account for planting purposes. If planted with trees suitable for the various soils and situations, they cannot but succeed; and if properly attended to afterwards by judicious thinning and training, keeping in view the different purposes for which they are destined, and each variety being planted on land most suitable for its growth, they cannot fail to become as remunerative to the proprietor as any other crop that could be grown on the land. It is well-known that the progress made by trees planted on land properly prepared for them is much greater than on land where the trees are put in and allowed to take their chance. This is the great point for consideration. Were public money advanced for planting purposes, and properly employed, it would prove quite as advantageous to the lender as the receiver, as similar advances have for drainage purposes. This is a subject perhaps foreign to the object which this paper aims at; still it is worthy of consideration, provided the land to be planted does not approach close to our railways. It must be noted that young trees must not be planted too near a railway, for if so, they will not progress as they ought to do, in consequence of the constant dashing of smoke and steam through them, the injury being greatest on those lines where coal is used instead of coke. While on the subject of a more extended cultivation of trees for railway sleepers, I would particularly call attention to the black Italian Poplar (*Populus monilifera*). This is perhaps the most rapid growing tree we have in cultivation, and will produce in a given number of years more available timber than any other tree yet introduced. Since the commencement of the Larch disease, this Poplar has become very extensively cultivated, and its wood is now used for various agricultural purposes, as well as for railway waggons, &c. The wood of the black Italian Poplar, as well as that produced by some of the other species, all being equally free-growing is worthy of being experimented on for railway-sleepers, so as to ascertain its duration when compared with the ordinary sleepers now in use. If prepared, and laid on broken metal, as sleepers generally are, it may last a very long time. As the black Italian Poplar is always propagated by cuttings, they ought in all cases to be taken from male trees.

Weeds on Railway Slopes.

To return again to our railway banks and slopes. A very large proportion of them are just as they were left by the railway contractor, but since overrun with natural weeds. Some of them have been sown with Grass seeds, but the greatest proportion are covered with Grass, which has found its way into them from various sources, and mostly the Creeping Wheat or Couch Grass (*Triticum repens*). On some steep slopes this Grass may be found very useful for binding the banks, and thus preventing them slipping. It is exceedingly difficult to keep the Couch Grass out of the adjoining hedges, and its running propensities are such that it insinuates itself into the neighbouring pastures and cultivated lands. If the soil should be in the least degree loose, it runs through it with great rapidity. The dried stems of this Grass are exceedingly troublesome while withering on the slopes. It is the cause of many of those autumnal and spring fires which take place on railway banks, being so easily ignited by sparks from railway engines, and, working through the hedges, they also frequently set fire to extensive tracts of wooded land. This is a subject which demands serious attention, as the amount of damage annually sustained from such causes has become very serious, and often leads to unprofitable litigation, resulting, in most cases, in favour of railways, from the plea that such fires may have been occasioned from other incidental causes. Were railway companies enforced to use wire guards over their engine-funnels, as adopted on the American lines, particularly those which have to pass through extensive forest lands, such conflagrations would not be so

frequent; and when fires do occur, those railway companies, where the engine-funnels are protected, ought to have the best of it, particularly when litigation has to be resorted to. It is certainly very annoying to witness extensive tracts along our railway banks covered with black scars, when, at such a trifling expense, wire guards could be procured, and thus prevent many wholesale conflagrations. It would likewise be the means of establishing a more profitable employment of railway slopes. Without such engine guards many of the suggestions for their improvement will be in vain. In almost every district weeds of the most villianous descriptions, both annual and perennial, infest our railway banks, and their seeds are not unfrequently wafted over the neighbouring grounds, to the great annoyance of their proprietors. Roads, walks, lawns, and gardens, also suffer severely from this cause; and unless some means are taken to have them reduced it will soon become, if not already so, a very serious matter for this country. To remedy this growing evil with newly constructed railways, some steps ought to be taken during the first and second years after formation, as any process of cleaning cannot be done afterwards without much trouble and expense. When a railway is first formed, it is generally very easy to tell from what particular cutting on the line the soil has been taken, as the primitive plants on the new made embankments are generally identical with those growing on the banks of the cuttings, although miles apart—thus showing that the soil is full of seeds, and at all depths. On a critical examination of railway slopes all over the country, no plant has turned up, as far as I have been able to ascertain, but what was formerly known to be indigenous to the neighbourhood. When the English railways were first opened, particularly those in the midland counties, the Common Horse Gowan (*Chrysanthemum leucanthemum*) was the most abundant plant along the banks, as large tracts on both sides of the cuttings, and the embankments formed out of them, were perfectly white with its flowers, showing that the seeds had been long buried in the soil. A copious list of indigenous plants may be quoted to show that new-formed railway slopes will produce a large amount of vegetation, both annual and perennial, proving that the soil is abundantly charged with seeds, but identical in all cases, as before stated, with plants found on the surface. To keep railway banks free of weeds, it is absolutely necessary that they should be hoed and raked once or twice before being sown down with permanent Grass or other seeds. By a treatment of this kind a very large amount of noxious weeds would be destroyed while in a germinating state; but if allowed to progress without such means being adopted, the roots will be found to penetrate deep into the ground, and can only be eradicated by a process of trenching. In many districts these weeds are becoming a curse, and will continue to be so unless some means are adopted to turn our railway banks to better account. If railway banks, particularly in those places where the soil, declivity, and exposure is good, be properly cleaned at first, many perennial plants could be introduced, which would prove not only lasting on the medium railway slopes, but could also be turned to good account for feeding and other useful purposes.

Forage Plants.

Many of the perennial leguminous or Pea-tribe plants would prove appropriate for such places, as groups of various kinds are every here and there to be seen on railway banks—not sown, but indigenous to them—all proceeding as if from a common centre, either by the dispersion of seeds or by the running or extension of their roots. Were the seeds of such plants collected and sown, as millions of all can be got if a little care is taken to procure and raise them, they might be afterwards planted on properly cleaned railway embankments. Many of these leguminous plants could be usefully employed for feeding cattle, either in the green or dried state, such as the Crown Vetch (*Coronilla varia*), Sweet Milk Vetch (*Astragalus glycyphylus*), Kidney Vetch (*Anthyllis vulneraria*), blue-tufted Vetch (*Vicia cracca*), the Bush Vetch (*Vicia sepium*), the Meadow Vetchling (*Lathyrus pratensis*), the Bird's-foot Trefoil (*Lotus corniculatus*), and the Sea-side Pea (*Pisum maritimum*). Besides these, the Medick, Lucerne, Saintfoin, and Melilot, all members of the Pea tribe, would prove useful in such places. This latter group are extensively used on many of the Continental railway slopes, particularly on the Belgian section. Besides leguminous plants, examples in numerous other natural orders may be found equally suitable for growing on railway embankments, also useful for feeding purposes, such as the Burnet (*Poterium sanguisorba*), Comfrey (*Symphytum asperum*), Rib Grass (*Plantago lanceolata*), Queen of the Meadow (*Spiræa ulmaria*), Milfoil or Yarrow (*Achillea Millefolium*), and the copper Day-Lily (*Hemerocallis fulva*). This latter plant has been strongly recommended for cattle-feeding purposes, the leaves being produced earlier in the season than most other kinds. On south exposed railway banks the Day-Lily would

have an imposing appearance, both for its foliage and flowers, as well as the flowers of many of the leguminous and other plants just mentioned. The upright Sea Lyme-grass (*Elymus arenarius*), is a plant which ought to receive more attention than it now does. Although a sea-side plant, it succeeds admirably in gardens, and therefore ought to do well on our railway banks. Its matted running roots prevents the shifting of sand or loose soil, which will render it very useful in some situations. Sir H. Davey proved that this Grass contains more than one third of its weight of sugar, but it is reported not to be eaten by any of our domestic animals owing to the rough texture of its leaves. Surely some use might be made of a plant yielding such a quantity of sugar as the Lyme-grass does, either by cutting and drying in a green state, to be afterwards chopped up for feeding purposes, or for other uses which the agricultural chemist ought to find out. A coarse fabric is said to have been manufactured from the leaves by generations long gone by.

Oil-yielding Plants.

Many plants suitable for the production of oils would be found to succeed well, such as the Peppermint, Spearmint, Lavender, Thyme, and Balm; the Hundred-leaved and Damask Roses could also be grown on many of these banks. The two varieties of Roses just mentioned are extensively cultivated for their essential oils; and now that the use of Rose-water is every day becoming more and more a luxury at the dinner-table, its cultivation on such slopes cannot be too strongly recommended, to say nothing of its beauty and fragrance to the travellers while passing along railways where portions of the slopes are covered with them. The Horse-radish is another plant which may be recommended. It would grow freely, and the extract of its roots might be turned to many good purposes, besides mixing with mustard.

Medicinal Plants.

Why limit ourselves to perennial plants useful for the above-mentioned uses, when numerous plants more immediately connected with the healing art could be profitably grown, such as the Chamomile (*Anthemis nobilis*), Horehound (*Marrubium vulgare*), Rue (*Ruta graveolens*), also the Tansy (*Tanacetum vulgare*), Wormwoods (*Artemisia Abrotanum* and *A. Absinthium*), and the Elecampane (*Inula Helenium*). The Wild Convolvulus (*Convolvulus sepium* and *C. arvensis*) would feel quite at home on all railway banks. A preparation is made from their running roots which is considered highly purgative. Several narcotic plants now extensively used would be found more out of harm's way if grown on railway banks than in garden ground, such as the Henbane (*Hyoscyamus niger*), Belladonna or Deadly Nightshade (*Atropa belladonna*) Monkshood (*Aconitum napellus*), Bittersweet (*Solanum dulcamara*). The Fox-glove (*Digitalis purpurea*) and the Great Mullein (*Verbascum Thapsus*) are also in request by the chemist. Both plants will be found suitable and ornamental for such places. The Chicory (*Cichorium Intybus*), would also succeed admirably: from this plant the chemist and coffee merchant would get abundantly supplied. The Wake-robin (*Arum maculatum*) would also succeed well, and its tubers might be found to yield a superior starch to that produced by the plants grown in woods which is its native habitation.

Fibre-yielding Plants.

It will, perhaps, not be out of place to call attention to the varieties of Yucca or Adam's Needle now in cultivation, as yielding a fibre which ought to be very valuable for paper-making purposes. They are mostly hardy, and all produce a beautiful tough fibre, besides a substance yielded by their stems of the nature of strong gum or glue. The Yuccas are extremely ornamental, both as regards foliage and flowers, and on south-exposed railway banks ought to succeed well. The Yucca gloriosa, which is, perhaps, the hardiest, and the species now most abundant in the country, will be found the most desirable to cultivate. When this plant begins to get into a free growing state it will yield a very large amount of leaves, and will not receive injury by an annual removing of the lower ones; and, for strong fibre purposes, few plants capable of being grown in this country can equal it. It may be remarked, that the Yuccas are rather too valuable as yet to be extensively used for such purposes. If they should be found, after careful experiments, to be serviceable for paper-making or other useful designs, nurserymen might be induced to turn their attention particularly to it, and would soon be enabled to produce them in quantity. The Yucca, particularly the Y. gloriosa, possesses powers of increasing very different from most other plants yet introduced into this country. It scarcely ever produces seeds, and, if it did, years would elapse before the progeny would become of the least use. To make up for this deficiency, it has had powers of propagation assigned to it very different from most other forms of vegetation. The methods by which the Yucca can be propagated are of two descriptions. If the

roots are carefully bared on one side, which would be sufficient for the plant to endure during one year, a number of egg-shaped bodies, from 4 to 6 inches in circumference, will be found attached to the large fleshy roots, varying in number according to the size of the individual from which they are taken. In some cases as many as fifty have been removed from one plant at a time. During the following year the opposite side may be opened up, and the larger eggs extracted. Many of these egg-shaped bodies, while attached to the plant, will remain long dormant, particularly while the plant is growing with only one stem. If it should happen that the top runs into flower, which takes years to accomplish, or if otherwise injured, no matter from what cause, these egg-shaped bodies will immediately start into growth, and a dense thicket of stems will soon be produced all round the injured one. The same is applicable to some plants where no injury appears. In such a case it will be found that the plant is making an effort to throw up a flowering stem, and, in all likelihood, will do so before the expiry of two years. If these egg-shaped bodies are taken off, as suggested, and placed in soil, keeping the tapered end uppermost, they will very soon push out roots and grow. It is preferable during the first year to keep them under glass; and after being a couple of years in nursery lines, they could be permanently planted out. Another method of propagation is by cutting the flowering stems, or even the stems where the leaves have been taken off, into slices of different thicknesses. After placing them in boxes of light sandy soil, and subjecting them to gentle heat, it will soon be found that numerous shoots will be produced from the sides of each detached portion, as dormant buds exist on the stem, one at the base of every fallen leaf. If it should ever become necessary to remove the tops altogether for fibre purposes, many of the dormant buds along the sides of that part of the stem left will be found to push out numerous shoots, which would never have happened if the top had not been taken off. As more shoots are likely to be produced from the sides of the topped stems than the plant will be able to maintain, all extra ones can be removed, and, if subjected to gentle heat, they will soon produce roots, and make fine plants. It will be seen from the foregoing remarks that this extremely useful plant, now only grown for its Oriental foliage and its magnificent spikes of cream-coloured flowers, frequently 8 and 10 feet in height, possesses qualities and means of propagation almost peculiar to itself, if due advantage were taken of it. In several districts of this country tons of the leaves could be procured for experimental purposes; and, if found useful, plenty of gardeners could be induced to turn their attention to its cultivation, so as to enable it to be extensively introduced on our railway banks. I have no hesitation in saying that it will succeed with any ordinary amount of attention. In many districts of Scotland the *Yucca* flowers very freely, and the lower portions of the flowering-stems are generally thrown away, instead of being turned to propagating purposes, as above described. The Butcher's Broom (*Ruscus aculeatus*), is another plant which would succeed well on all railway slopes. When properly established, it would cover very large tracts, owing to the peculiar way it produces its suckers. A spade now and then driven down through the roots, so as to separate the rhizomes, will enable the plants to extend themselves more freely. Before being extensively tried, this plant ought first to be experimented on, so as to ascertain its qualities, whether pulp-producing or otherwise. Numerous others might be mentioned, but sufficient has been given to direct the attention of chemists to this most important subject.

Plants for Railway Hedges.

Before leaving the remarks on railway banks and slopes, it may be necessary to say a few words about railway hedges, as this is a subject now well understood and admirably carried out all over the country. In many districts of England they seem to receive much greater attention than many of those planted for the intersectional fencing of land. The plant generally employed for railway fences is the White Thorn, and a useful plant it is for such purposes, and now contracted for as regularly as the rails themselves. On some of the new formed lines the varieties of the evergreen *Hollies* ought to be tried, particularly on those portions of a line running through extensive and well regulated policies in sight of the mansion. In some cases, the proprietors may be induced to pay the extra difference of the plants, while the after-keeping will be much the same as the ordinary Thorn hedge. In all peaty districts the Spruce Fir will make an excellent evergreen fence. It will cover more ground than the Holly; but in mossy situations this extra land will be found of less value. In sandy places, and particularly those near the sea-shore, the Sea Buckthorn (*Hippophaë rhamnoides*) will be found an admirable substitute for Thorns to form hedges. If it should ever be required to make at once an impenetrable live fence, the Hornbeam (*Carpinus Betulus*) will be found the most suitable, and for this purpose clean grown sapling plants,

6 or 7 feet in length, ought to be procured. After the ground has been properly trenched and prepared, the plants should be put in two together, at every 10 or 12 inches, according to the thickness or length of the saplings employed, giving one an inclination to the right and the other to the left. After being trod in firmly, commence to plait all together, taking one set of the plants the one way, and the other set contrary, interlacing them at an angle of 45°. It will be necessary to tie them at top with a piece of wire or rope yarn, and also at several points near the bottom, to keep them in position till they adhere to each other. To facilitate the union, although not absolutely necessary, it will be desirable to take a thin cutting off the bark of several, particularly where they approximate. Shortly afterwards they will grow together, and form an impenetrable net-like fence. From the pressure caused by the plaiting, they will throw out numerous shoots along the stems, which will continue to work in and fill up the interstices. In time the whole length will become an impenetrable mass, all ingrafted together, and will bear cutting-in like any other hedge. Numerous other plants will be found in nursery establishments suitable for such purposes, as the Hazel, Elm, Ash, Beech, Laburnum, &c. Such hedges can be made of any height, depending entirely on the length of the saplings employed. When not in leaf, they will be found extremely ornamental and agreeable to look on, and, therefore, worthy of encouragement, particularly when standing on a level with the rails. If it should ever be wanted to plant such hedges so as to render them useful as well as ornamental, particularly on lands slightly elevated above a damp surface, in such places Willows could be profitably employed, and the annual cuttings taken from them would yield a considerable revenue. Besides, when such plaited hedges are cut for profit, they are more likely to be kept in order than Thorn hedges, particularly when they run through lands which would be profitably employed for the growth of Willows. When planting Willows for such purposes, they could be inserted either as growing plants or cuttings—the latter would be preferable, provided the strip of ground has been properly prepared for them. They should be placed 12 inches apart, and during the first thinning the strongest shoots should be left for plaiting. After the plaiting has been successfully accomplished, all after shoots could be removed for basket-making purposes.

Gardens at Stations.

The only other subject to which I shall allude is that relating to the further ornamentation of the land in the immediate vicinity of railway stations. This is a most important point, and one which ought to be more generally attended to, and, if persevered in, will amply compensate for any of those eyesores previously complained of. Of late years a very great improvement has been effected on them, and we are glad to observe that the taste for station embellishment is greatly on the increase, as we now see one railway vieing with another for this laudable end. Almost all the extra decoration is due to the horticultural taste of the station-master or those under him. We do not quite agree with all the freaks exhibited on roadside stations; still such freaks in the meantime ought not to be objected to, as they often lead to other and better suggestions. When we consider the great diversity in the tastes and ideas of those for whose gratification they are chiefly intended, allowance must be made by the public for the primitive notions which are displayed at some of them. The great diversity in localities and soils where intermediate stations have to be placed, must in many instances call forth a great amount of ingenuity from those in charge, so as to turn them to the best account. It will be invidious in the meantime to enter upon their merits, notwithstanding that very good taste has been devoted to many of them. As this is a wide subject, it ought, some time or other, to be taken up in detail, so as to give credit to those to whom credit is due, and to point out to others what is capable of being done. In the meantime, we shall content ourselves by urging as much as possible a continued increase in station embellishments. It is to be hoped that railway directors will encourage it as much as possible. In all new-formed stations those interested would do well to examine as many as they can, and select the good points of each. Some of the stations are, perhaps, too much hampered for room, and in some we find a wall of rock rising almost perpendicularly on each side. Such stations have charms unseen, and, in the hands of a skilful garden architect, could be made to assume forms at once interesting and characteristic of the district. Such schemes would take years to accomplish, as stones are always in demand, no matter of what kind, their gradual removal would always be facilitating the end in view. Many of these stations, where the rocks are not excessively high, could have the material removed down to the surface level for 70, 80, or 100 feet in breadth, till the time arrives for their final arrangement. Instead of upright rocky walls, having a narrow platform and the rails between, where the sun rarely penetrates, we ought to see sloping rocky banks,

made as irregular as it is possible to work them. The hollow places formed could be filled with soil, to be planted with Coniferae or shrubs and flowers suitable for rocky places. It is greatly to be desired that civil engineers will consider all these hints while designing new station buildings. In the station building department a very great improvement has of late been effected, but much still remains to be done. Any one travelling over the kingdom cannot fail to observe the comfortable-looking stations on many of the English lines where brick and white stone are employed, and surrounded by well-kept Grass and shrubs. If a little more ground could be allowed round some of the Scottish stations, they would soon be able to vie with the English in every respect. When the train comes to a standstill, it is certainly pleasant to cast the eyes on these delightful spots, particularly after a weary run of many miles, and then rest contented till arriving at another station. By a continued improvement of the kind suggested, delicate eyes may be kept at rest, instead of straining them on tree stems and telegraph posts, knowing that something more pleasing is in store for them at the next stopping place.

General Observations.

Numerous other plants might be mentioned, both useful and economical; but sufficient have been given to show what will do if properly tried. Parties leasing portions of railway banks would soon find out many paying perennial crops. None but perennial crops should ever be introduced; if otherwise, they would become extensively used for culinary vegetables, which would necessitate an annual digging and manuring, and thus cause a wasting and wearing down of the banks, which would not be the case with perennial crops. Strawberries have been frequently recommended, but never carried out. If to be extensively grown, they should be planted in diagonal lines, as all perennial plants ought to be on such places. Of the different plants here proposed for growing on railway embankments, those which yield fibre are the kinds which ought to receive the greatest amount of attention, particularly those suitable for the making of paper, or producing pulp which can be used in various branches of the arts. The demand for paper making materials has now grown to such an extent that foreign countries may have a difficulty in continuing to keep up a supply. Many experiments have at various times been made with plants for this desirable end; and it is well known that numerous are the kinds which, if due attention is paid to them, will yield pulp suitable for such purposes. The expense of raising them on soil capable of ordinary cultivation makes such home materials rather expensive to obtain; but if such plants can be grown on railway slopes, it is but natural to suppose that the cost of producing a suitable material on such places ought to be greatly diminished. In order that this subject should receive that attention which it deservedly requires, the Society of Arts or other public influential bodies, ought to offer a medal or other award for experiments on pulp-producing plants capable of being reared on railway embankments, and thus be the medium of benefiting the country by rendering such neglected places serviceable for the public good, the demand for paper being annually on the increase, and likely to be so for generations to come.

Poison of Nettles.—M. Naudin maintains that after a violent storm of wind the sting of the Nettle is deprived of its virulence.

THE GARDEN IN THE HOUSE.

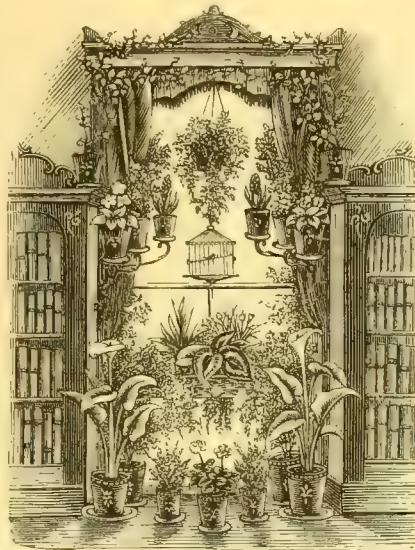
WINDOW GARDENS.

OUR object is not to instruct those who have gardeners and green-houses, but to merely give a few hints to such as have but little time and convenience for such work, and yet love flowers with a devotion unsurpassed by those more favourably situated for its gratification. Plants, like ourselves, need air, light, warmth, food, and water, and they must have all these in sufficient quantities, or they will suffer and die. Abundance of the best of food for plants in pots is found in old meadows, where Grass has grown a long time. A pile of turf laid up to rot makes excellent potting earth. We can give no rule for watering. Keep the earth moist, just about as you observe it in the garden in what we call a "growing time," that is, a few hours after a brisk thunder shower. Most of our plants are injured by too much heat. For a general collection of house plants it is not well to allow the thermometer to be above 70°, and if they could be kept in a room where the thermometer would usually not range above 65°, it would be the better. In the night time 50° is high enough. Give a little fresh air every fine day, and all the sun-light attainable. Cleanliness is as necessary to plants as to anything else; therefore secure them from dust, if possible. Sweeping carpets is almost enough to kill both plants and sweepers. It will be a happy day for our lungs, as well as for the lungs of plants, when we get a good substitute for carpets, something that will not raise a cloud of dust every time a step is taken. Until

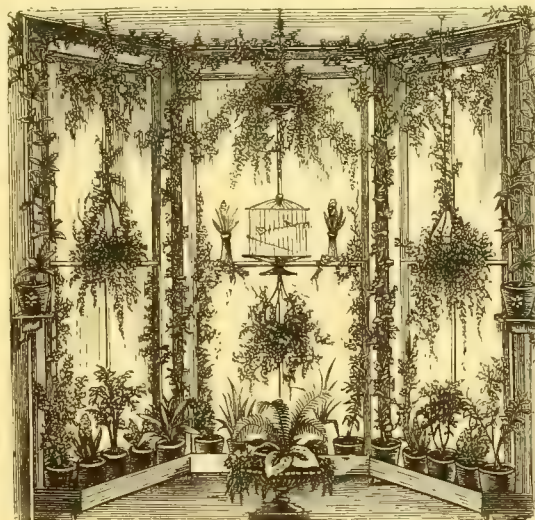
this good time comes, give the whole plant a good syringing occasionally, or a bath in a pail of water. A little moisture in the air of a room is pleasant and healthy. We would not say that a greenhouse or a Mushroom-house would be a good place to live in, but we do say that a room that will keep a few plants in good health, other things being favourable, will keep a family in the same desirable condition. The family can breathe the confined, dusty, dry, over-

heated air of a room and live, because they are out in the fresh air a good portion of the time, but those who are confined to the air of our living rooms the greatest number of hours are the most delicate, and the plants having to remain in these over-heated, ill-ventilated, and dusty rooms, without a moment's relief, must droop and die. Cleanliness, fresh air, moderate heat, and a moist atmosphere will secure healthy plants. Where a bay window is devoted to plants, glass doors should be placed between them and the living room, as a partial protection from dust. These can be closed a part of the day, and thus a lower temperature be obtained for the plants than would be comfortable for the occupants. A library or spare room that is not constantly used is an excellent place for plants, because such a room is kept rather cool most of the time. Plants suitable for winter flowering indoors are numerous, but none afford so much pleasure as a good collection of bulbs, such as Hyacinths, Tulips, Narcissus, and others. In the garden there are usually a few plants that may be taken up and potted. The

Ivy, Madeira Vine, and *Cobæa scandens* are graceful climbers, and will bear almost any amount of bad treatment. Tuberoses that have not bloomed in the garden and are showing flower-stems may be taken up and potted, and will flower in early winter. A root of the *Dicentra* will also give satisfaction. A pot of *Mignonette* costs but a few pence, and not many expensive plants will afford as much pleasure. Sow the seeds in August of plants to bloom at Christmas. The *Sweet Alyssum* treated as



Window Garden with Glass Doors.



Open Bay Window Garden.

advised for Mignouette will also please, and nothing will make up better in button-hole bouquets than these sweet little flowers. A few larger plants are desirable, and the Calla, Dracæna, and Begonia are very patient under almost any kind of treatment. We have not, however, space to enlarge on this subject, but will merely say that a few Lilies, like longiflorum, auratum, and lancifolium, though not often seen in the house, will afford a pleasant surprise, and flower in the order named.—*Tick's Floral Guide*.

PLANT STANDS FOR HALLS.

IN outer halls stands of growing plants form very effective ornaments, but the plants selected for this purpose should be such as would not feel the effects of cold currents of air; for, during the winter months in an outer hall, they would, of course, be subject to sudden changes of temperature; while, during the summer, almost any plant may be placed under such circumstances with the greatest safety. The size of plants used for this purpose must bear some kind of proportion to the size of the hall in which they are placed, and as to the shape and the material of which the stands are made, that must depend on the taste of the purchaser; but the dearest and most ornamental, when fitted up, often do not look so well as those of a less decorative character. The plant selected for the centre should always be the tallest, a Dracæna, Cocoa-nut Palm, or India-rubber plant, being best adapted for this purpose. Round this should be grouped other plants either remarkable for flowers or foliage, which will be set off to advantage by that selected for the centre. Round the edge should be placed something of a drooping character, which will hang down gracefully and produce a good effect. For a stand in a hall, which is not heated in any way, there are no plants better suited than hardy British Ferns, which withstand cold draughts well, and preserve their foliage fresh and green all the year round. For town houses nothing is so suitable as Ferns, as they grow well where other plants would droop and fade in a few days. A handsome stand of British Ferns could be arranged as follows:—In the centre should be set a tall plant of Lastrea Felix-mas; then, grouped round it, a few plants of Scolopendrium vulgare, and again, outside of these, such varieties as Asplenium adiantum-nigrum, A. marinum, A. Trichomanes, Blechnum Spicant, and Polypodium vulgare. The Parsley Fern (Allosorus crispus), too, should not be forgotten. Ferns succeed best when each is set in a separate pot, and, when planting them in this way, care should be taken not to crush any of the fronds, as, if bruised, they fade at once. The size of the pots should be regulated by the stand in which they are to be placed; if a large one is employed, the pot in which the centre Fern is to be planted should be a 24-sized one; for those outside of it 48-sized pots will be large enough; and for those round the outer edge 60-sized ones will suffice. In the bottom of each pot should be placed some broken crocks, for drainage—not, as is too often the case, thrown in in any way, but placed so that the moisture will drain down through them, without the soil choking them up. Over the crocks a little Cocoa-nut fibre, or Moss, should be placed, and over that, again, a little of the soil in which the plants are to be potted. If Ferns, they should be planted in a mixture of leaf mould, rotten turf, and peat, a good dash of silver-sand being thrown in to keep the whole porous. On the surface of the pots, and between them, should be put wood Moss, as in the case of stands for sitting-rooms. A common seed-pan filled with Selaginella denticulata dropped into a small vase has a fine appearance; long sprays grow out over the sides of the vase, and droop down 8 or 10 inches, producing a charming effect. During the summer time a few Roses, or similar flowers, might be placed, if desired, amongst the Selaginella. A. HASSARD.

Floral Funerals.—Floral funerals are more frequent than is generally supposed. Only the other day one of our country papers contained an account of the funeral of the wife of the son of Sir Charles Locock, Bart. The outer coffin was polished, and, instead of being covered with the pall, it was covered with costly flowers, and festoons of flowers were entwined around it. The mourners also each carried a bouquet of white flowers, and were not appressed in the usual habiliments of mourning. A muffled peal was rung both before and after the interment, and also as the body was being borne from the church to the grave, and after the coffin had been lowered into its last resting-place the mourners threw their bouquets upon it, so that nothing was visible but a mass of flowers. Some twenty years ago, when Dahlia-shows were frequent among the operative weavers of Spitalfields and Bethnal Green, a well-known Dahlia-grower was followed to the grave by a number of weavers, who carried bouquets of his favourite flowers in their hands, the coffin being covered with an immense number of the same flowers.

THE ARBORETUM.

DIRECTIONS AS TO PLANTING.

1. First, see that the roots of the tree or shrub which you are about to plant are in proper condition. It should be provided with a sufficiency of small fibrous roots, for it is from the spongioles at the extremities of these that the plant derives its nourishment. Trees vary in the form of their roots, from the dense mass of tangled fibres close to the crown, which makes the Rhododendron so safe to transplant, to the long, coarse, thick tap-root, which renders transplantation a dangerous process with some trees unless removed young. But these tap-roots emit from various parts tufts of fibres, and it is on these being uninjured, and in sufficient quantity, that the success of the planting will depend.

2. It is evident, then, that, should it be found necessary to prune the root, the knife should be applied to the big coarse taps, but not to the fine hair-like rootlets, all of which should be carefully preserved.

3. Let the hole dug to receive the plant be rather larger than required by the roots when spread out.

4. If possible, dig the holes which are to receive the plant some days or weeks before the planting takes place, so as to leave the interior of the hole exposed meanwhile to the fertilising influences of the atmosphere, rain, &c.

5. Rainy, or at least damp, cloudy weather, is by far the best time for planting. Avoid as much as possible planting during sunshine, or frost, or a run of dry weather.

6. If, for any reason, you are unable to plant your trees and shrubs for some time after receiving them from the nurseries, keep them meanwhile in some cool, dark shed, with wet Moss or matting flung over the roots. These must be carefully guarded from three enemies, viz., frost, drought, and light. Sunshine is death to roots.

7. In planting, see that the fibrous roots are not cramped or tangled in a mass, but spread them out carefully, so that they occupy nearly the same position as they did before the plant was taken up.

8. If the tree has been reared in a pot, the roots will most likely be found coiled up spirally into a dense mass. If so, they must, before planting, be patiently unravelled, and the fragments of pottery placed for drainage extricated. In doing so, care must be taken not to injure the extremities of the rootlets, which must be placed as deftly as possible in the hole, and spread out in such positions as that, when they grow, they shall not resume the twisted form.

9. Beware of planting too deep. The tree should not be fixed in the ground lower than will bring the soil, when the hole is filled, an inch or two above the collar of the tree. The collar is the spot where the ascending axis (the stem) meets the descending axis (the root). Thousands of young trees perish annually from being planted too deep. In situations exposed to violent winds it may be allowable to plant a little deeper; but it is only meeting one evil by substituting another, and it would be preferable to undergo the expense and trouble of staking the young trees where it is required.

10. When the plant is placed in the hole, and the roots well spread into their natural position, fill the hole half full with some fine soil, different, if possible, from that in which the hole has been dug. Then shake this soil into the interstices between the roots, by gently pulling the stem up and down just enough for the purpose, and afterwards tread the soil lightly in. You may then proceed to fill up the hole, and, when done, again tread the soil in pretty firmly before making the surface neat.

11. See that the stem, when planted, be quite perpendicular. If the tree is of that shape or size as that the wind may sway it about, and thus disturb the roots, it should be fixed to a firm stake till it has become settled. See that the stake is so attached that it shall not, by its contact, fray or wound the bark of the tree.

12. If the soil be very dry at the time of planting, mulching must be resorted to. That means watering abundantly, and in relays as the first watering gets absorbed, so as to make sure of saturating with water all the ground about the roots. Mere surface watering is a sham. You must water abundantly and repeatedly, till no doubt remains as to the water (which percolates very slowly through dry dusty soil) having reached the lowest roots. Anything short of that is useless.

13. Avoid planting on raised soil or mounds, unless in very exceptional cases, such as low, damp, swampy spots. Unless in very wet seasons, very little of the fertilising rain reaches the roots of trees planted on mounds, as the sloping sides of the mound carry the water, as it falls, away from the roots of the tree to be wasted in the surrounding ground. Plants thus deprived of their fair share of moisture never thrive well, and, in dry summers, often die. If you take up a tree thus circumstanced, you will find the ground about its roots quite dry and parched.

14. On the contrary, it is a good practice to scoop a kind of

shallow basin round young newly-planted trees, by slightly elevating the soil at a little distance round the stem, thus inclining it inwards towards the plant. In this way the rain, as it falls, is directed towards, instead of being conducted away from, the roots.

15. In planting raised banks for hedges or screens, bear in mind the above, and let the top of the ridge, on which the plants are set, be hollowed a little, so as to incline the water-shed towards the roots.

16. When a tree is planted on a lawn, or any other grassy site, do not let the herbage come close up to its stem, but cut away a circle of the turf of larger or smaller diameter, according to the size of the tree. As a rule (of course with exceptions), the roots of a tree extend as far as the extremities of its horizontal branches, and that should be (until a tree has grown large) the measure of the circle that is to be bared of turf and left open to the beneficial influences of the air, rain, and sun.

17. With trees planted in unfurfed soil, similar care is to be taken not to allow rank and tall weeds to grow within a certain radius of the stem. Many a young plantation has been ruined by the encroachment of luxuriant weeds, which monopolise the nutriment of the soil, prevent the access of rain and sunlight, and choke the foliage of the lower branches of the trees.

18. As a rule trees, especially Conifers, dislike coarse manure about their roots. But decayed turves, rotten leaf mould, and, indeed, any mixed refuse or rubbish, especially if of a different nature from the soil in which the plantation is made, form composts which wonderfully stimulate the growth of newly-planted trees.

19. If a plantation be made in stony soil do not remove the stones. To many trees they are rather beneficial than otherwise, and to very few do they seem detrimental. Experiment has proved that the removal of stones from stony land impairs its fertility to a remarkable degree, at least for some years.

20. In the purchase of grafted or budded trees see that the union between the graft or bud and the stock be properly effected. Sometimes (and this chiefly occurs amongst Continental growers) a slim graft is embedded on a thick bludgeon of a stock out of all proportion to it. Sometimes it is a vigorously-shooting species that is wedded to a slow-growing stock which cannot furnish the quantity of sap required. In both cases failure sooner or later is the result. In budded plants it is the stock that is generally the most delicate part. Unless it is healthy and well-stored with sap, the bud, however vigorous at first, will gradually decay.

21. For choice and delicate trees and shrubs, and generally for such as are liable to injury from the cold of our climate, do not select the lowest and most sheltered spots to plant them in. In valleys and enclosures they suffer more from frosts than in more elevated and open situations. The protection required by plants that are impessible to our climatic conditions is rather the screening them from the bitterness of our north-east winds in spring than the shutting them out from healthy summer breezes. In closely-secluded nooks and dales such plants are stimulated into early growth in spring and late growth in autumn, and, in both cases, the tender sappy shoots are unable to resist frost. In more open and exposed situations the growth is shorter, but the wood of the shoots is better ripened.

22. In peaty soils there generally exists between the surface-peat and the sub-soil (whether sand or gravel), a stratum, from 1 to 6 inches thick, of a hard gritty substance, impermeable to water, which is locally denominated "rust" or "pan." Until this "rust" or "pan" be quite broken through by the process of trenching (for which a pick-axe is generally indispensable), it is in vain to plant in such soil, as it will nourish nothing but the indigenous Heaths and Scotch Fir. But once trenched and the "rust" broken through, the land becomes very fertile, and peculiarly well adapted to the growth of trees and shrubs of all kinds.

23. Plants reared in peaty or similar light soils bear transplantation better than those grown in heavy lands. The reason is, that in light and porous soils, the roots are mostly globed into fibrous tufts near the stem, whereas in strong land the roots of plants wander farther away in search of moisture, &c., and through a denser medium, so that they become elongated and coarse. All tap-rooted plants, whether the tap-root be congenital or superinduced by the nature of the soil, should be transplanted while young, otherwise they have little chance of surviving the process. Hence it is, that young plants growing spontaneously in woods, whether self-sown young trees or suckers sent up by older ones, and, generally saplings undisciplined by nursery cultivation, scarcely ever survive transplantation. Plants with fibrous roots are generally taken up with "balls" that is, with more or less of soil clinging to the dense trusses of roots, and in that state, transplantation is a safe and easy process. Of this, Rhododendrons afford a striking instance, as, when taken up with good "balls," they can be moved with impunity at almost any season of the year.

24. Trees and shrubs intended for transplantation should not

be left more than two years without being moved, or (which in most cases is equivalent) "spaded." This last process consists in passing a spade (or other tool peculiarly constructed for the purpose) round and under the tree, so as to cut off the tap-root (if any) and to confine the lateral roots within a certain given space. This work should be done in the early autumn, so that there may be time for fresh rootlets to be pushed forth inside the ball, to replace those which were cut off outside of it. A plant so treated will hardly ever fail of successful transplantation, as it is isolated from the surrounding soil, and when transplanted, will extend its roots in its new locality without sensibly feeling the difference.

25. The safe removal of large trees is ensured by a process identical in principle with the above, but on a proportionately larger scale. A trench is dug round the tree, one season before its intended removal, at such a distance from the main trunk as may be considered sufficient to leave roots enough attached to the tree to feed it when removed to its new position. This trench cuts off all the roots extending beyond its inner circumference. The spade, or other special tool, is then pushed successively from all parts of the trench as far under the roots of the tree as possible, so as to intersect the "tap," if any. The trench is then filled in, and the tree proceeds, during that season, to develop fresh rootlets within and around the "ball" left inside of the trench. By the ensuing season this ball will contain within itself all the roots necessary to the life and growth of the plant. Then, by proper machinery of a simple nature, both the tree and its ball of roots, with plenty of soil adhering to them, can be lifted up and safely removed to the new site which the tree is intended to occupy.

26. Transplanting may be performed at any time from October to April, according to the nature of the season. But the universal canon to be observed is to plant as much as possible during wet or cloudy weather, and to refrain in sunshine, drought, or frost. Such intervals of forced inaction may be profitably employed in settling the spot where each tree is to be placed, in digging the holes, and in providing the compost to be put round the roots when the planting is performed.

27. The sooner after the receipt of the trees from the nurseries they are finally planted, the better; but if there must be some delay in planting them, it is better to keep them in a dark shed, as before directed, than to "lay them in by the heels," as placing them hurriedly and temporarily into the ground is technically called.

28. In moving trees of any size, it is advantageous to place them, when re-planted, in the same position, with respect to the cardinal points, as they occupied before being moved. In other words, it is best that the same side of the trees should face the west (for instance) as faced the west before removal.

29. Do not unduly cut up your grassy expanses by dotting too many single specimens, or, worse still, too many flower beds, or small clumps over its surface. What single specimens you do plant should be of the very finest or rarest species. If Conifers, they should feather to the ground; if deciduous trees, they should be of such species as that when the branches are allowed to ramify 5 to 6 feet high on the trunk, they should dip to the ground, as in the Tulip tree, Catalpa, Horse Chestnut, and many other trees. Amongst them may also be interspersed a few pendulous trees, which, when not too numerous, add a peculiar grace to the scene.—*Heatherside Manual*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Prostrate Cherry (*Cerasus depressa*).—A specimen of this at Heatherside has a trunk 1 foot high, nearly a foot in diameter, the branches hugging the ground and covering a space of many yards. It is one of the most singular objects we have ever seen, and would prove a most effective shrub for many positions in the garden.—A. MONGREDIEN.

Catalpa for Posts.—The fact that Catalpa wood almost, if not quite, equals Locust for durability when set for posts has long been known. It is one of our most ornamental trees both for bloom and for foliage; and on account of its rapid growth is a favourite in lawns and along avenues. The annual rings seen when the stem is sawed across are often one inch in thickness, and this gives the wood great beauty when worked for furniture or put to other like uses.

Beech as a Hedge Plant.—About Marchmont, Beech hedges line the public roads for miles, and are quite an ornament to the country. There is no doubt that Beech is about the very best plant for hedges, and that it forms a better protection to animals than Thorn. In planting a Beech hedge, a standard Thorn planted at certain distances apart would produce a good effect, especially if trimmed a little with the shears once a year, to keep the heads in shape, but not, of course, to such an extent as to spoil the flowering in spring.—H. K.

The Great "Forest Tree" of Moray.—A magnificent aboriginal Pine (*Pinus sylvestris*) is, *par excellence*, known by the name of the "Forest Tree" to the frequenters of the forest of Dornaway, which for miles surrounds the castle of the same name, the northern residence of the Earls of Moray. The "Forest Tree" is 15 feet in circumference, and rises to the height of 50 feet from the ground without a branch, and terminating in a vast spreading head, like a gigantic green tent, impervious to snow or rain. In summer its topmost boughs are covered with the blossoms of the white wild Rose, which has climbed to the summit of this mighty tree.—C. E. STRAET.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Indoor Fruit Department.

Begin to collect leaves and stable litter for forming a fermenting bed on the inside border of the early Vinery. This will be needed about the beginning of next month; mix the materials well together and let them remain in any spare corner until required. If a Vinery is to be started about the new year, it should now be pruned and cleaned. Give the inside borders a liberal rich top-dressing, and keep the Vines quite cool by withholding fire-heat and admitting plenty of air. Painting the rods is not so much practised now as it was at one time; here, no Vines were ever painted with any kind of mixture, there being no insect pests to eradicate. All loose bark is scrapped off, but not into the quick; and a good scrubbing is afterwards given with a hard brush and soft soapy water. This is quite sufficient. Where red spider has, however, been troublesome throughout the summer, some stronger means may be desirable. In that case, painting may be resorted to with advantage; the paint should consist of equal quantities of sulphur, soot, lime, and clay, dissolved and thoroughly incorporated together; after scraping and washing the rods, carefully paint them with this mixture; do it with a hard hair-brush, inserting it well into the crevices about the spurs, and leaving only the eye or bud untouched; also wash the walls with dissolved hot lime. Mealy bug is the most troublesome pest to get clear of when once established in a Vinery, and to clear it out thoroughly the means just named must be vigorously applied. In pruning, if a few eyes are wanted for purposes of propagation in the spring, they must be selected now; choose the most prominent buds on the best ripened wood, that is wood that is hardest and has the smallest pith. Tie the prunings of each variety carefully up together, and place them in any outside border with a little soil about their base, where, with a mat thrown over them during severe frost, they may remain until wanted in the spring. Do not cast away the smallest of the young Vines which have been grown this summer if a few fruiting pot canes are wanted for forcing early next autumn. These small Vines, though they may be too weak for planting, are very suitable for cutting over to within a couple of eyes from the bottom, and starting early, to be well ripened for early fruiting. Such Vines are termed "cut backs," and they ripen their wood sooner than those started from eyes the same season; but, except for very early work, nothing surpasses a one-year old Vine; and "cut backs" should never be used for planting out in a border, as their roots, after being confined two years in pots, get badly entangled. Look diligently after decaying berries in hanging bunches; do not get into a system or periodical round of looking over them once a week; on the contrary, always remove such berries as soon as visible. The surface of inside borders should now be very dry, avoid, therefore, disturbing it in any way, as dust arising therefrom settles on the fruit. Every favourable opportunity should be taken to give Pine plants a little fresh air, as the time is approaching when the ventilators of Pineries will rarely be opened, and the hardier the plants are grown now the less will they suffer during confinement. Late potted suckers will now be pretty well rooted; examine the soil in which they are grown, and see that it does not get over dry. Sufficient water should just be given to maintain the roots in a healthy condition. Ripe fruits should all be supported by means of stakes inserted in the pots. By fastening the base of the crown to the stakes, the fruit is prevented from falling, either to one side or the other, and the crowns are kept from getting twisted, as they often are when not thus supported.—J. MUIR, *Glovenfords*.

Hardy Fruits.

Peaches, Nectarines, and Apricots can only be properly classed in our climate as half-hardy fruits, and hence their treatment should often be widely different from that of really hardy fruits, such as Cherries and Apples. Even many Pears can hardly be said to have their blossoms hardy in our climate, and, therefore, the practice of early autumnal pruning, nailing, and training of the trees, as I have lately directed for Cherries is hardly to be recommended. On the contrary, summer and spring pruning are safest for them. The later the pruning the later also the flowering; and the later the flowering the greater the certainty of a crop. The long spurs left from summer stoppings prove outlets for the first flush of the sap. They are not only the first served, and the first to break into leaf, but, in doing so, they take the pressure, as it were, off the first buds, enabling them to rest in safety perhaps a week or a fortnight longer; and, in thus resting, a crop is secured. In pursuit of a late growth, and bud opening in the spring, it is good and safe practice to unnaïl Peaches, Nectarines, and Apricots at this season, and draw the bulk of the tree away from the wall.

The operation, however, must be performed with care; sufficient leaders must be left to support the trees and prevent them from breaking. This object ensured, the trees can hardly be too much loosened nor too far tied back from the walls. The latter are the sources of heat, while now, and for the next four months, the trees require for the safety of their crops, not heat, but cold. Besides, the temperature is much more uniform 6 inches or a foot from the wall, than on it; a short period of winter sunshine runs up the temperature on the face of the wall to summer-heat; the night comes and cools it down to the level of the surrounding atmosphere, and the trees are thus, day by day, exposed to the utmost extremes of temperature. If we preserve the sap of the trees at rest throughout the dead season, we not only do our best to ensure a crop, but to reserve the vital forces, and keep intact the health of the trees. Some add increased force to the retarding influence of unnaïling by shading the trees with a loose thatching of dry Fern fronds or straw. Such non-conducting shades moderate the extremes alike of heat and cold, and are of more service in winter in resisting the insinuating influences of gleams of sunshine than in resisting the force of extreme cold. In cases where such expedients are thought desirable they ought not to be employed till all the leaves have fallen, as the unnaïling and shading ought not, in any case, to be performed simultaneously, as the wood is benefited by having its wall side exposed for a few weeks to light and air. As remarked in former calendars, October Peaches are abnormally late this season; and, if not yet ripe, they should be at once enclosed with glass lights. The Salway and Lord Palmerston have been exceptionally fine this autumn, as well as unusually late. The general run of mild weather has developed their size to the utmost, and their flavour has proved all that could be desired. The nights, however, are becoming frosty; and glass, to finish those still unripe, has therefore become necessary.—D. T. FISH.

Indoor Plant Department.

In conservatories, forced Camellias should now be coming nicely into bloom. Tall Chrysanthemums planted here and there amongst them have a fine effect. The earliest lot of the latter, both of tall and dwarf kinds, should be now in bloom; a second portion should be put in an intermediate temperature, to bring them on a little, and the main part left in as cool a house as possible. In many cases Chrysanthemums have not yet been taken indoors; but it is not considered advisable to keep them out longer, as there is danger of frost injuring the buds. Some of the old plants planted out in borders, and well furnished with flower buds, should be lifted and potted for indoor decoration. Bouvardias may be neatly but sparingly staked and brought into the conservatory as they come into flower. Such Cyclamens as are in frames should be syringed overhead every dry day, plenty of air given them, and, at the same time, a little fire heat. Herbaceous Calceolarias and Cinerarias should be re-potted when required, and kept in cool airy pits near the glass. Lantanas that were well cut back in August should be beautifully in bloom, and taken from the forcing pit to the conservatory. Salvias of various kinds lately cut back should also be coming in nicely. Early potted Hyacinths, Tulips, and Narcissi that have filled their pots with roots, and the leaves of which have commenced to push, should be taken from positions where they have been plunged and placed in an intermediate temperature on the house floor. After a few days their tops will be better able to withstand light, when the pots should be plunged in a very gentle bottom-heat near the glass. Mignonette in 6-inch pots should be thinned out to a few plants; it is generally sown in the pots in which it blooms, for it does not transplant well. Should a larger pot be required, the plants should be shifted wholly without breaking the balls. Heaths and Epacris should be arranged in airy positions in the greenhouse near the glass. Epacris should be neatly tied to light supports, as should also Azaleas, Chorozemas, Genetyllis, and other plants of that kind. The chief operations in stoves will consist in washing leaves, staking and arranging, so as to give all plants an equal amount of light. Amongst flowering plants Ixoras will be still in fine condition; indeed they may be regarded as perpetual bloomers. Aphelandra Roeziana will also now be beautifully in bloom. Among fine-foliaged plants, one of the most conspicuous is the variegated Pine-apple, which, when grown near the glass, assumes a reddish hue. Forcing pits, should be full of Dutch bulbs, Chrysanthemums, and hardy shrubs, such as Lilacs, Deutzias, Azaleas, Rhododendrons, Daphne Mezereum, Kalmias, and others. Azaleas that have been gradually innured to early forcing should be used for the earliest work. A temperature of 55° at night and 65° by day, and a position near the glass, in a light house, suits them admirably. Too much heat is a great evil in Azalea forcing. In order to hasten a change of colour in Aucuba berries, they should be placed in a gentle heat. Good crowns of Lily of the Valley should now be lifted and potted. When potted, place them on shelves arranged one above the other in a warm moist house. On

these shelves the pots should be arranged quite close to each other, Cocoa-nut fibre, being worked in between them, and a layer of 2 inches or so of it placed over them. They may remain in this position until they throw up leaves, when they should be removed to a lighter situation. If required for cut blooms only, they simply should be put into boxes in a compost of leaf-mould, loam, and a little thoroughly decayed manure and sand. Poinsettias should be plunged in bottom-heat, in order to cause them to produce larger flowers and bracts. Old plants that have been placed out of doors or in cool houses during the summer months should also be similarly treated; but those required for late work should not be plunged. *Thysacanthus rutilans*, *Justicia*, young plants of *Pentas carnea*, plants of *Eucharis amazonica* lately rested, *Heliotropes* from summer cuttings, *Tradescantias*, such as *Warszewiczii*, *discolor*, &c., and many other plants, should now be plunged in bottom-heat.—F.

The Flower Garden and Pleasure Grounds.

The weather, being still comparatively mild, beds of *Pelargoniums*, *Calceolarias*, and *Verbenas* are still in considerable beauty; and, where it is not intended to preserve such plants, they may be allowed to retain their position in the beds as long as they remain attractive. Some of the winter and spring-flowering bedding plants, such as *Aubrietias* and the *Forget-me-nots*, which are already showing flower, will be in proper condition to take the place of the summer bedders as soon as the latter are removed. The two systems, *i.e.*, spring and summer bedding, may, therefore, thus be made to unite with each other, and in that way prevent the flower garden ever being entirely devoid of flowering plants. All bedding plants intended to be preserved should now be in a place of safety, and will, together with rooted and partially-rooted cuttings, require to be frequently attended to in the way of removing all decaying leaves. Water should be given sparingly at present, as about this time damp is more to be dreaded than frost. A glass roof will, probably, for some time to come, be sufficient protection against frost; and an occasional brisk fire during fine days, when abundance of air can be given freely at the same time, will be found to be beneficial in warding off damp. Most of the many varieties of *Fuchsias* form very ornamental and permanent flower-beds, more particularly the white corolla'd varieties of the *Madame Cornelli* type. When planted out in the open air they may generally be treated as ordinary hardy herbaceous plants; or, during very severe winters, the surface of the beds containing them may be mulched with a slight covering of cinder ashes, old tan, or sawdust. The *Cineraria maritima* is also an exceedingly useful hardy bedding plant; as a white or silver-foliaged marginal plant, it is, perhaps, unsurpassed, and will last for any number of years; indeed, the older the plants the more white the foliage becomes. It requires no protection during ordinary winters, but should not be cut down until about the beginning of May, when it will be found to be breaking close to the surface of the soil; after being cut close down it will immediately break into growth and become at once effective. It is of the greatest value in ribbon bordering, contrasting, as it does, agreeably with the *Perilla*, or, better still, with *Dell's* dark-leaved bedding Beet. For this purpose it is generally to be preferred, as a silver-leaved plant, to the *Centaurea*, as it can be cut or pinched in with impunity. Continue to gather seeds of ornamental trees, shrubs, herbaceous plants, and annual flowers, as they become ripe. Chestnuts, Walnuts, and Acorns, may be sown at once; while smaller seeds, and those likely to be injured while germinating by spring frosts, need not be sown before the beginning of March.—P. GRIEVE, *Culford, Bury St. Edmunds*.

Hardy Flowers, Alpine Plants, and the Wild Garden.

So essential is it in a calendar of operations that the operator should possess a fair knowledge of the materials upon which he has to operate, that I do not hesitate once again to pass in review those plants, which, though gradually decreasing in number, yet contribute a fair amount of floral beauty to the several departments which come under the above heading. To the large and well defined natural order *Compositæ*—certainly the richest in numbers—belong our *Chrysanthemums*, invaluable for winter work; but, as yet, they are only developing their buds, and, in truth, they scarcely belong to my department. Those starry flowers, *Michaelmas Daisies*, are radiantly expressing their silent thanks for bright blinks of autumn sunshine. To the species of the genus *Aster*, the term "legion" is most appropriate; they vary in height from 2 to 3 inches, as represented by the Alpine forms, such as *A. alpinus*, *ramosus*, and *altaicus* (all summer bloomers), to the giant American types of New England origin, as the name *Novæ Angliæ* implies, which attain a height of 6 and even 7 feet. Besides these extreme variations in development, there are shades of colour from the richest Syrian purple to pure white, through every tint of blue, lavender, and grey, and equally diverse habits of growth. Let me endeavour to select a few of the more distinct in respect of

habit and colour. Amongst the blue flowers, the Russian *A. bessarabicus* stands unrivalled; closely allied, and treading on its heels in the matter of beauty, are *A. Amellus* and *cassubicus*, said by some botanists to be synonymous; but, as grown with me, certainly distinct. They differ from the former in the closer arrangement of the ray-like florets, the more compact growing of the flowers, and the regular arrangement of the blunt-pointed leaves, all along the stem; rarely does any of them exceed 2 feet in height, and seeing that they retain all their leafage in spite of the driest summers, they are an invaluable adjunct to an herbaceous border. Dare I offer them each an associate, I would at once say none is more happy and appropriate than the lively variegated *Vinca elegantissima*, with its lustrous leaves arranged along its slender and gracefully recurved stems, forming a golden-mottled setting, from which the azure stars rise with a vastly-increased charm and loveliness. Next to these in decorative value—if, indeed, it does not rival them—is that form of *A. longifolius* known by the well-merited title of *formosus*; it produces its blossoms of lovely rosy-lavender in such masses, that they altogether lose their individuality. Associate this plant with the pure white Japanese *Anemone* in a group, and you may realise the effect of the roseate tint of early dawn on the summit of a snow-capped mountain. Amongst the dense growers, there is scarcely any old garden but has its tuft or tufts of the compact *Aster dumosus*. Scarcely exceeding a foot in height, it bears a somewhat similar relation to *A. Chapmani* as does the terrier dog to the greyhound amongst the canine breed. Scarcely taller, but wonderfully graceful and airy in its contour, is *A. miser*, whose tiny little blooms are produced in myriads, and form a charming and appropriate sort of neutral tint for decorating the flower-stand at this season of the year.

The *Sikkim Aster*, though rigid in its growth, as well as in the flat panicles its blossoms present, is more rarely met with than it ought to be; looked at from a botanical point of view, it is one of the best defined species we possess. Very closely related are the following species:—*Ericoides*, *multiflorus*, and *pendulus*, the last, by its gracefully pendulous growth, completely hiding any bareness of the stems below. These all grow to a height of from 2 to 3 feet. Of similar size is the *Aster patens*; but its flowers are large light blue, and erect; its foliage is broader, and bluntly-pointed. Another group, just now coming into full bloom, may be very fittingly represented by *A. Chapmani*, consisting of closely-allied species—*viz.*, *lævis*, *laxiflorus*, and *purpuratus*. These are all remarkable for a light elegance of contour, owing to the lax distribution of their slender floretted flowers, as well as the slender foot-stalks on which they are supported. *Aster rigidus* and *aspericaulis*, both good showy species, have come and gone since my last review, so I must pass on to *A. Novæ Angliæ*, whose dense panicles of rich Tyrian purple blossoms are supported on stems from 4 to 5 feet high; could we only find some means of reducing its height or preserving its stem foliage, it would be one of our finest *Asters*. Here, however, its late blooming prevents it from maturing its seeds. I have tried, unsuccessfully, to obtain some from its native country, as to that source alone can we look for any possibility of improvement. There are two deep rosy-coloured varieties of this species, called respectively *roseus* and *roseus major*; but, so distinct are they, that they are, in my opinion, deserving of specific titles. In a fine season they get with us to a height of 6 or 7 feet, and are ten days or a fortnight later in blooming. They, however, have the same defect as the primitive species as regards nakedness of stems, rendered more conspicuous by their increased height. *A. oblongifolius*, often called *bostoniensis*, though possessing much smaller flowers, has pretty twisted short leaves, largely distributed over the younger portion of the branches. The latest of all the tall *Asters* is *A. grandiflorus*, a scarce and somewhat tender plant, belonging to the south of France. It is readily recognised by its short, rigid, recurved leaves, a character which extends in a marked degree into its involucre bracts and its large dark blue flowers. *A. bessarabicus* is frequently met with in gardens under this name, but the two are widely distinct species. This plant does best at the foot of a sunny south wall, where its early spring growth ensures an early development of flowers in the autumn, and the full ripening of its underground stems. There remain yet two dwarf species I must not omit, *viz.*, *A. versicolor* and *A. pulcherrimus*; neither are more than 9 inches high; the former, as the name indicates, first produces pure white flowers, which gradually change to a rosy tint as they begin to fade. The latter has narrow linear leaves, somewhat harsh and rigid to the feel, each little branch supporting six or eight good-sized flowers. Both these species are better adapted for the rock-work than the herbaceous border.

Other Flowers of the Season.—The genus *Silphium* has still two representatives in full flower, *viz.*, *laciniatum*, the

"Compass Plant" of North America, which we usually have 12 feet in height at this season, but which has, for some cause or other, omitted to flower with us; failing the bloom, however, the curiously cut large leaves have always a distinct and special attraction. *S. Terebinthinaceum* is now, however, in such bloom as I never saw it before, with stems nearly 8 feet high, perfectly smooth and shining, rising from a cluster of quite entire leaves, each supported on a long foot-stalk. The hot, dry season, if it has affected the height of some of the late Sunflowers, has brought into nice bloom one or two that we do not often see flowering. Amongst others, the *Helianthus orgyalis*—whose slender leaves droop gracefully along the entire length of a stem 8 feet high—is decidedly improved by its terminal clusters of blossoms; *H. atrorubens*, with its dark-red stem—not flowers, as some might imagine; also *H. Hookeri* and *doronicoides*, are all strong-growing but useful late-blooming plants, adapted to either the herbaceous border or the wild garden. There is a genus called *Stevia*, of which we have several species now in bloom, that are not half sufficiently grown, and are considered by many to be tender. Amongst the more distinct and effective species are *S. ovata*, with scattered panicles of pure white little flowers; *S. ivæfolia*, with dense masses of rosy-white blossoms; and *S. tracheloides*, with a lax arrangement of bright crimson flowers. These, as well as *S. Eupatoria*, *S. serrata*, and *S. monardæfolia*, are all not only useful border plants for the second rank, but equally useful for cut flowers at this season of the year. One reason why they are considered tender is, I believe, because they are not planted sufficiently deep, and their mass of thick wiry roots rot off from the old root stock; there ought to be at least 6 inches of soil above the crown to ensure perfect immunity from frost. *Asteriscus maritimus*, sometimes called a *Bupthalmum*—though not hardy with us—has such a nice habit of growth, and flowers so abundantly through the entire season till the frost comes, that it is always worth the thought of inserting a potful or two of cuttings in the autumn, and placing the same for the winter on a greenhouse shelf; it is by no means as showy as the *Gazania*, but is still worthy of a place in the rockery—the sunnier the better, as it comes from the south of Spain and north of Africa. The same remarks apply to the pretty slender-leaved *Nejas-falcata* and *gracilis*, both Composites from the Cape, producing gay orange-yellow flowers throughout the whole summer, and always remarkably neat and elegant.

The Evening Primroses or *Oenotheras* still present a wonderful display of bloom on the biennial species, such as *E. Lamarckii*, *macrantha* and *gigantea*; the latter last year attained with us a height of fully 8 feet, but, owing to its vigorous growth, scarcely realised its full period of blossom ere the pretty marred its beauty. Amongst the *Ericas*, large tufts of *E. Mackayi* are still covered with their beautiful soft rosy flowers, as are also *multiflora* and its white variety; these, however, have been somewhat earlier than usual this season. The closely allied *Menziesia polifolia* and its varieties—are almost continuously in bloom throughout the summer, and still yield charming bright-coloured sprays of either crimson or pure white flowers. On the rockery, *Anthyllis montana* is covered with blossom, for the second time this season; its dwarf compact habit and soft rosy heads of flowers render it a valuable plant. The latest of all the *Statices*, *S. Willdenowii*, is now tipped with lovely lavender blue, at the terminal points of its somewhat scattered inflorescence. 'Tis the last of the genus for the season, and hence all the more prized. The value of many species of *Oxalis* for autumn decoration, whether in pots or on the rockery, has recently been alluded to by some of your correspondents, and well deserving is the genus to be worked up again. Many species have been lost sight of in general cultivation. *O. purpurea* had, a few days ago, blooms fully an inch across, of lovely rose, not more than 2 inches high, which, in the full sunshine of a bright autumn day, had a charming appearance; equally large, and of a similar tint of colour, though very different in habit, is *O. multiflora*; both these are, however, too tender to stand our climate, though possibly in Cornwall they might prove hardy. *O. Bowieana* is just now coming into full flower at the foot of the front wall of the greenhouse, where it has grown for years, enjoying, at the same time, the shelter of such a locality, and the perfect summer's rest, which its dryness secures. The so-called *O. floribunda*, however appropriate the name may be, is certainly, as is generally known, quite distinct from the plant figured in the *Botanical Register*; it might as well be called *sempervirens*, as it is in full bloom from May to November. The last and least of the *Oxalises* is that sometimes called *granulata*, but more correctly named *lobata*; the dense dwarf cushion of bright green leaves (only developed within the last week or two) are now enlivened with numbers of bright yellow flowers; this plant is somewhat exceptional in the genus as having its leaves composed of four leaflets in place of three. *Hypericum ægyptiacum*, though not quite hardy, is of such a neat habit, and so floriferous, that it deserves a passing note; its leaves are little bigger than a Thyme, and its little flowers are pro-

duced by hundreds. The lovely autumn Crocuses have had their day and are now past, but *Sternbergia lutea* is yet gay with yellow flowers, that remind one strangely of spring. *Sempervivum ciliatum*, owing to its affecting a considerable altitude on Teneriffe, stands well with us in a cold frame, and has the happy power of indulging its cultivator with a nice crop of intensely yellow blossoms late in the autumn as well as in early spring; it is a very distinct form of our common type of the House-leek family.—J. C. NIVEN, *Botanic Gardens, Hull*.

Kitchen Garden.

This is the best season for repairing or re-planting Box edgings. Where these are large, and have stood some time without being re-planted, it will be advisable to remove some of the exhausted soil and replace it with fresh material; in most instances this can be had from the border adjoining without incurring much extra labour. Where permanent edgings of a dead character are preferred, there is a hard blue Staffordshire brick well suited for making good, neat, durable, kitchen garden edgings; they look best when placed on end, sloping at an angle of about 30°. If cheapness is an object, any hard ordinary bricks, such as I have seen made in Sussex and elsewhere, where a similar sub-soil prevails, would do. Soft red bricks, like those commonly used for building in Norfolk, would be too porous, and would soon perish. The proper way to put in a brick or tile edging is to lay down a line along the outside limit of the path; open a trench along the reverse side the proper depth, leaving a firm perpendicular edge next the path, against which the bricks should be placed and made firm. To plant Box edgings properly requires a considerable amount of time and skill; but brick edgings may be put in with less labour by a good handy man. There is yet time to plant Cabbages to succeed the earliest lot; although, in most cases, it will perhaps be better to defer this till February, as, if we have a hard winter, they will suffer less if standing somewhat thickly in the nursery beds, in which they will afford each other mutual shelter. Any spare plants standing in seed-beds that are strong may be dibbled in thickly in some warm place, to be used as Coleworts during the winter. I prefer this plan to planting the main bed thickly, with the intention of thinning for use as the season advances; as, on retentive land, the frequent treading in thinning the crops in bad weather makes it unsuitable for the plants left. But where the stems from which the Cabbages were cut during last spring and summer are allowed to remain, and were treated to a surface mulching during the hot weather, they will now be producing sprouts, and will continue doing so through the winter; and where this crop is allowed to remain, this obviates the necessity of specially planting Coleworts. It, however, takes a good deal out of the land, as everybody will admit who has seen the amount of produce taken from a bed of Cabbage treated in this way. This, however, can easily be met by heavy dressings of manure, and by selecting a less exhausting successional crop. Our usual plan is to allow this crop to stand till the end of February, by which time the young Cabbages will be coming in and the crop will be of little further value. A very heavy dressing of decayed and charred vegetable refuse, including a proportion of burnt earth, is wheeled on the land, which is then turned up deeply and finally planted with Potatoes. I find a dressing of this kind to be of more value for invigorating an exhausted soil than stable dung. Everything in the way of useless vegetables, weeds, leaves, &c., should be frequently cleared away. Clean culture is as important (especially amongst growing crops) now as at any season of the year. Land covered with weeds or strewed with leaves or vegetable refuse, cannot derive the same advantage from atmospheric influences as where clean culture is the rule.—E. HOBDAV.

PERSONAL.

THE Rev. Reynolds Hole's garden at Caunton is being remodelled, under the direction of Mr. Marnock.—Mr. Wm. Hugh Gower retires from the Victoria Nurseries, and, we believe, from horticulture altogether.—Many of our readers will be pleased to learn that Mr. W. Thomson, of the Tweed Vineyards, is recovering from his recent very severe indisposition.—Messrs. Fletcher, Lowndes, & Co., are to erect the handsome conservatory which is to form the upper story of Messrs. Barr & Sugden's new premises in King Street, Covent Garden.—Mr. Wills is arranging a handsome conservatory for Lord Walsingham, at Merton Hall.—Mr. Meston is to carry out the works in the new parks at Birmingham and Sheffield, both of which have been designed by Mr. Marnock.—At a recent meeting of the Royal Isle of Wight Horticultural Society, the first premium for Roses was awarded to Mr. Edward Meehan, who for nearly forty years has had charge of the gardens and grounds of St. Clare. During this time he has been one of the leading exhibitors in the above society, and, with few exceptions, has taken the first premiums for Roses as a regular thing. Mr. Meehan is the father of the accomplished editor of the *American Gardeners' Monthly*.

THE GARDEN.

"This is an art
Which does men's nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

TREE MANAGEMENT IN AND NEAR TOWNS.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

TREES planted in and near towns are but too frequently neglected and left to themselves as soon as the planting is over, insomuch that their growth is to some extent impeded, and they seldom assume the regular upright form required, without considerable care. Trees for avenue lines ought to be specially trained for that purpose in nursery rows, and frequently transplanted before being transferred to their permanent places. Instead of being long and lanky, they are better to be stout and about 6 or 8 feet high. After they are thoroughly established in their new position, it is time to commence stem pruning, and branch pointing; and if such trees are properly attended to for a series of years, they will make infinitely better specimens than those planted from 8 to 10 feet in height, which certainly produce a favourable appearance at first, but generally fall behind from unavoidable causes. The contractor employed to put in and protect such plants is generally bound to uphold them for a year or so, after which period such trees pass out of his hands and are afterwards neglected. This state of matters is particularly noticeable in many of our leading cities, and chiefly in the case of trees planted within the last twenty or thirty years, but more particularly during the last ten or twelve. Many of those alluded to, although in a healthy condition, have their stems short from the want of timely upright pruning, some of their terminal leaders running strangely to one side, or having one or more of their side-branches outgrowing the rest; such extra growths should be shortened, in order to encourage a proper development of the tree. All through the southern suburbs of Dublin, newly arranged for streets, trees have been extensively planted along the edges of footpaths, and although all are in a free-growing healthy condition, the want of branch and stem-pruning at the proper time has caused them to assume rather a wide-spread appearance, the stems being shorter than they ought to be, and the tops, although healthy, very much dwarfed. The same remarks are applicable to many of the trees under the management of the municipal authorities of other cities, as well as those now to be seen in many suburban villa gardens. In the latter, the proprietors plant freely at first, for the purpose of screening or sheltering their houses, and the result is that many such residences are now so thickly surrounded with trees as to render the atmosphere about them close and unhealthy. Few of the proprietors seem inclined to thin out even the original-planted nurse-trees, such as Poplars, Willows, &c., from the fear of opening up their grounds too much, and thus becoming overlooked by their neighbours. In consequence of this, complaints are rife as to trees overhanging adjoining gardens. In some cases the offending branches are cut off, and a pitiful appearance is then presented to the complainant, worse even than the original intrusion. It would be frequently better to have such trees removed altogether or pollarded, when new-made side-branches would be abundantly produced, and might be afterwards pointed, and kept within proper bounds. The state of matters alluded to is every year becoming more and more a source of annoyance, and worse to remedy. All trees, both old and young, under municipal control, ought to be put under the management of a properly certificated forester, instead of committing them to the mercy of anyone whom the municipal powers for the time being may choose to call in to attend to them, and this often after mischief has been done, not unfrequently by parties who possessed but a very indifferent knowledge of pruning operations. Unless an experienced inspector is often amongst such trees, and observing from time to time the requirements necessary for their preservation, it will be difficult to get them kept in the condition in which they ought to be. Many large trees are found in a decaying

condition from the want of surface-dressing at the proper time; this duty should also devolve on the forester. Municipal authorities would, perhaps, not have sufficient work to fully engage the services of an experienced forester, but any spare time might be advantageously employed at a certain remunerative rate by the directors of town squares and cemeteries, and also by the proprietors of suburban villa gardens. Town squares or enclosures are generally under the management of joint proprietors, whose duty it is to suggest and attend to the necessary pruning and thinning, but if one of the proprietors should take an over-interest in getting such work accomplished, it is generally considered to be for some selfish end, and his views are not, therefore, endorsed by others; when, if it were possible to employ the services of a competent city forester, such things would go on smoothly. In country districts, the hedge-row trees are generally seen in good condition, as they are or ought to be attended to by the forester employed on the estate through which such roads pass. The manipulation requisite for the management of forest and ornamental trees in towns is frequently entrusted to gardeners, who naturally fall into the management of such work; but they often do not possess that scientific arboricultural knowledge which has from long practice been acquired by a thorough-bred forester; the latter knows the time and method of pruning, both of old and young trees, so as to prevent that internal injury which too often befalls them; and, for securing the proper development of trees in after years, he is the proper person to employ for such work.

KENSINGTON GARDENS.

WHILE in Kensington Gardens the other day, two or three matters occurred to us on which it may be useful to say a few words. Entering at the small gate at the corner of Kensington High Street, opposite Mr. Albert Grant's new "palatial residence," we found the superintendent's house levelled with the ground, green turf in its place, with a stout iron railing separating it from the high road, instead of the dull piece of high dirty brick wall, which has existed there for many years. We drew attention not long ago, to the rumour that this change was about to take place, at the solicitation of Mr. Albert Grant, who, for the sake of obtaining a better view from his house, was said to have offered to be at the expense of the alteration. We felt a moment's distrust of the propriety of acceding to such a proposition, because, if private solicitation is once allowed to affect the disposal of public property, it is difficult to draw the line where legitimate arrangement ends, and undue influence begins. This is, however, undoubtedly a matter in which a certain amount of discretion must be allowed, but one in which its exercise should be closely scrutinised. Now that we have seen the result of the alteration, we have only to congratulate the authorities on having accepted the proposition; that is, supposing the rumour referred to to have been true. In all respects the alteration is a decided improvement. Whatever diminishes masonry and adds to vegetation in and about London, and more especially in our public parks, must be an improvement. For this reason we have always sympathised with the few reclamant voices, which, at the time, protested against the introduction of Captain Speke's obelisk into Kensington Gardens. All honour to the well-deserving, but let their deserts be recognised in suitable places. There is no need for forming a new Kensal Green in one of the few pieces of greenery of which we Londoners can boast. If not too late, may we ask, Is there no public square or open space, where stone and mortar are not out of place, into which it could be removed? There is the excellent precedent of the removal of Jenner's statue from another part of the gardens. Other instances of bad taste in these gardens are neither few nor unimportant; but what distresses us most is the lamentable fact that the decay of the trees in them goes on with increasing rapidity, and that no steps are being taken to replace them; for anything short of re-planting would now be ineffectual. With every care and economy the cost of such alterations must be great, but so is the object to be attained; and we feel sure that any expense in the preservation of Kensington Gardens as a sylvan retreat for the London public will be cheerfully met.

A. M.

NOTES OF THE WEEK.

— THE Phylloxera, we hear, has made its appearance among us in several ranges of Vineries, the Vines in some of which have had to be uprooted and destroyed, a fact which deserves the most serious consideration. There seems to be a reluctance among gardeners to admit that they have got it on their Vines; but, if something is not done at once to stamp it out, it will, by-and-bye, be impossible to do so. It is, therefore, exceedingly important that any case of Phylloxera, whether in a private or public establishment, should be made known, if any practical measures are to be adopted for its extermination. It has been suggested, as a means of staying its ravages in France, that instead of introducing American Vines, the wild Vines, abundant in many parts of that country, should be carefully cultivated; they produce, in a wild state, excellent fruit, and as they are very hardy, it is thought they would withstand the attacks of this pest.

— WE learn from a recent visitor to Vienna, that the flower-beds in front of the restaurants of the Stadtpark, have, this summer, exceeded in splendour of colour and arrangement, anything of the kind which has been seen this season in any other part of Europe, not even excepting the public gardens of Paris, or its famous Parc Monceau, or the parterres of Versailles; we also learn from the same source, that the populace of Vienna displays a respect and appreciation for works created expressly for popular enjoyment, which is not found to the same extent, in any other capital.

— THE Rev. Reynolds Hole writes to us to say that he quite agrees with Mr. Davison, of Hereford, as to the merits of the Rose President Thiers, the claims of which adverse seasons have obscured to some extent. He also suggests that those who protest so vehemently against the present arrangement of Rose shows should have a space allotted to them at some of our great shows for the illustration of their ideas on the subject. This course would be more instructive than a long and wordy discussion.

— LIVERPOOL, we find, is to have an aquarium and winter garden on an extensive scale. The latter is to be constructed principally of glass, according to a plan furnished by Mr. Rendle, and is to form, in fact, a large and handsome conservatory; in which are to be choice plants, fountains, and statuary, as in the Crystal Palace at Sydenham. Amongst other special attractions, too, is to be a large Fernery, arranged with a view to the most pleasing effects. Flower shows are also spoken of as forming part of the contemplated arrangements.

— MR. JOHN HORNE, of the Botanic Garden, Mauritius, who is now on a botanical expedition in the Seychelles, says (writing to Dr. Hooker) that he has visited the islands of Silhouette, Praslin, and Félicité, searching them from the sea-shore to the tops of the highest hills in Silhouette up to 2,200 feet, at which elevation Pitcher plants abound, hanging in immense clusters over every stone, bush, and tree. Flowers of these *Nepenthes* were obtained, and arrangements made for procuring a good supply of plants. When these materials come to hand it will be seen whether the *Nepenthes* of Silhouette is different from the *N. Wardii* which grows in Mahé. The tops of these mountains, where the Pitcher plants grow, have a perpetual moisture hanging over them, being almost constantly enveloped by mist and rain.

— THE boulevards of Vienna are more spacious than those of Paris. In the more important parts they are about 160 feet wide, and thus divided—the paved footpaths on each side are 18 feet wide; adjoining them, on each side, are paved roadways for heavy traffic 20 feet wide; next come, on each side, loose gravel roads, bordered with trees, for equestrians. The trees are, in some places, Oriental Planes and *Ailantus glandulosa*, alternately. In other places they are Horse Chestnut and *Robinia Pseud-Acacia*, all of which, from the favourable nature of the soil, are doing well. The poor Unter den Linden of Berlin, and even the drives and promenades along our own Thames Embankment are vastly inferior, both in plan and dimensions to this spacious stretch of Viennese boulevard.

— MR. DAVID THOMSON informs us that there are at present 250 spikes of *Calanthes* in bloom in the Orchid-house at Drumlanrig, besides others removed for indoor decoration in the castle and what have been cut for various purposes. The varieties grown there are *C. vestita rubra*, *C. v. lutea oculata*, *C. v. lutea flava*, and *C. Veitchii*. Many of the spikes are over 2 feet long, not including the stem of the spike. At a season when not many Orchids are in bloom, and when flowers generally are most scarce, these are invaluable; when out and placed in sitting-rooms the spikes remain fresh, and continue to expand the whole of their upper blooms for more than a month. As a rule *Calanthes* are starved. See what immense bulbs they have to form in a few months. That ought to be an index to the kind of treatment they require; the soil they are grown in at Drumlanrig is composed of the most fibry peat, a very little loam, a good proportion of horse droppings in a dry state, and a little Sphagnum. When the

plants are in full growth they are watered frequently with guano water. *C. v. lutea oculata* is a much finer variety than *lutea flava*; it is white, and nearly double the size of that kind; consequently, *flava* is not worth growing where there is plenty of *oculata*.

— SEVERAL nice Orchids are now in flower at Messrs Veitch's, foremost amongst which may be mentioned the rare and beautiful *Oncidium Rogersi*, on which more than 100 flowers are now open. In the same establishment *Masdevallia towarensis* is also bearing twenty-seven flowers. This is one of the best of winter-blooming Orchids.

— SEEDS of *Weigela*s were sown by M. Carrière in the spring of the present year. More than two hundred of the seedling plants flowered during the month of August, just as might have been the case with ordinary annuals. The plants were extremely small, scarcely 1½ inch high; yet most of these dwarf plants exhibited marked differences both in the form and colour of the flowers.

— *HYDRANGEA ACUMINATA* has proved itself to be a very handsome and highly desirable plant. It is, according to M. Carrière, the most beautiful species of the entire genus. Placed in a shady position, the flowers remained in perfection for a considerable time, and it bears the sun much better than any other species.

— WE learn that the exhibition of insects injurious to trees and garden plants, which was held in the Orangery of the Tuileries Gardens has just closed. The distribution of prizes took place on the 5th. The highest premium was awarded to a Viennese Savant, for a magnificent atlas, exhibiting all the organs and forms of the Phylloxera. Yet the Phylloxera question is still left open, which is discouraging. The exhibition, which lasted twelve days, was very popular; 20,000 persons paid the entrance fees, and 30,000 free tickets were issued.

— THE recent autumnal Rose show at Lyons, to which we have previously adverted, surpassed the most sanguine hopes of its projectors by its brilliancy, and by the interest which it excited. For many years autumnal Roses have not been seen in such perfection as they have been this season. It is superfluous to speak of the distribution of prizes, further than to say that M. Lovet carried off the gold medal, and that a first-class silver medal was also awarded to him for a magnificent yellow seedling Tea Rose, which is to be called *Perle des Jardins*—a fit associate, it is said, for *Maréchal Niel*.

— AN extremely beautiful Apple, called *Belle de Lippe*, is figured in the Belgian *Bulletin d'Arboriculture*, for the present month. The coloured plate devoted to it is one of the brightest and most successful specimens of chromo-lithography that we have seen. This beautiful Apple appears to have been extensively grown for more than half-a-century in the orchards of St. Trond, which forms one of the most important centres of the vast fruit trade of Belgium. It is said that this variety was originally received in a bundle of grafts from Normandy, where, however, it must have become extinct, as it is not to be found in the Norman orchards of the present day. The fruit merchants of St. Trond hold this variety in high esteem, as perhaps the very best of the class *Court Pendu*, or short stalks. It is also a very prolific bearer.

— FOR our London balconies and window sills, which have displayed since early spring such an abundance of gay floral colours, we are now reduced to a very restricted choice. We have arrived at the beginning of that long wintry season, during which evergreens, especially those which bear brightly coloured berries, must take the place of *Lobelia*s, *Pelargonium*s, *Tropæolum*s, and even *Mignonette* and *Stocks*. There is, however, a short transition period, during which the gay colours of the late flowering *Chrysanthemum*s, or one or two of the hardest autumn-flowering *Cyclamen*s, may be made to alternate well with the brightly mottled leaves of the *Aucuba*, and still, for a time, make our window sills pleasant, and even gay; but during the months soon about to follow, our decorations in the way of plants must be confined to *Eucalyptus*, *Box*, shrubby *Veronica*s, and similar plants, which must suffice till spring once more brings round the time of *Crocuses*, *Snowdrops*, and *Primroses*.

— MANY natural productions destined to produce great results in various branches of the arts, appear, on their first discovery, to be of small importance; and it is only by slow degrees that their real value becomes known. For fifty years after its discovery, Caoutchouc only served the purpose of effacing superfluous lines drawn by the black-lead pencil, while at the present time it has become a product of the first rank, its application to various purposes having given to its collection and importation a great and constantly increasing value; and it has led to the erection of industrial establishments on a vast scale, which give employment to hundreds of skilled workmen. The same may be said of guano; when first noticed and described by Humboldt in 1804, it figured solely as a ticketed and numbered specimen in museums. It was not till 1841, that M. Bosch-Spencer, Belgian Consul, at Lima, sent the first cargo to Europe, and now the revenues arising from it to the Peruvian Government amount to sixty millions of francs a year.

THE FLOWER GARDEN.

ROSE CUTTINGS STRUCK IN WATER.

SELDOM do we see Roses well grown on their own roots, and yet what freshness and beauty do we occasionally find among Roses grown in that way? What is more beautiful during summer than a bed of Roses, the shoots of which have been pegged down, so as to make the whole represent a mass of well-developed buds and fragrant flowers? Roses too, look well in the form of a hedge, and, as I write, I have "in my mind's eye," a hedge of Gloire de Dijon, on which there is every year abundance of pale fawn-coloured flowers, and stout waxy foliage, from May to November. This Rose is, in this instance, on its own roots. Rose cuttings strike readily, especially such as belong to the hardier and strongest growing kinds. Our illustration represents a mode of striking cuttings of this kind in bottles of soft water, a plan as simple as it is practicable, inasmuch, as cuttings taken off at any time during the summer, will root in this way in from five to six weeks, after which they should be potted carefully and placed in a close frame for a week or so until they have become established, when they are quite ready for planting out in either beds or borders. The bottles may be of any convenient size, and may be placed on shelves in the greenhouse, in a frame, or even in a sitting-room window, the attention they require being less than that bestowed on cuttings inserted in pots in the usual way. Rose cuttings may also be struck in pots filled with moist Sphagnum Moss. Even eyes separated, as if for budding, but having a little more wood attached to them, may be rooted with facility in pans of light earth surfaced with sand; I have often resorted to this practice in the case of new or rare kinds, and it is astonishing how robust and vigorous the plants raised in this manner become. As regards striking in water, I have tried Hybrid Perpetuals, Teas, and Bourbons in that way, and all have rooted freely; and I have some fine specimens of plants raised in this way. As to Manetti stocks, cuttings may be planted now. Procure some strong shoots, a foot or 13 inches long, and carefully remove all buds except the three top ones, which should be left to draw up the sap, and plant them in rows 18 inches apart, and 1 foot asunder in the row. Prepare the ground well before planting, which should be done with a spade, with which a trench should be cut for each row. In planting, place a little mixed sandy loam and leaf mould at the base of the cuttings, taking care to tread them in firmly, leaving the three buds out of the ground. If the cuttings do well, and are good and strong, they will be fit for budding the following season. If the winter is severe, it is advisable to protect a little, by means of some long strawy litter shaken over the beds. Those who wish to plant a few Briar stocks for budding the following season, will be able to obtain some at the present time, as Briars may now be had; care should be taken, however, not to allow their roots to get frosted. Plant in rows, allowing a foot between each stock. If a quantity is required to be planted, put them in in double lines, allowing 18 inches between the two rows, and 2 feet between each set of double rows, so as to afford room for budding. The root of the Briar requires careful pruning, in order to remove all spurious wood and bruised bark, leaving a neat club root; by so doing, stocks of this kind will certainly callus and root very much quicker than when they are not properly root-pruned, an operation to which all Briar stocks should be subjected before they are planted. H. G.



Rose cuttings struck in water.

CULTIVATION OF THE HOLLYHOCK.

HOLLYHOCKS require good garden soil, well trenched to the depth of 2 feet, and plenty of thoroughly decomposed manure, such as that from old Cucumber beds. A wet sub-soil is good in summer, but in winter is injurious to them, and to prevent surface wet injuring old plants left in the open ground I remove the mould round their necks, and fill up with about 6 inches of white sand. This preserves the crowns from wet. It is best, however, to plant young plants every year, as one would Dahlias, i.e., if fine flowers are desired. Hollyhocks may be propagated by means of single eyes put in in July and August, and also by cuttings put in in the spring, on a slight bottom-heat. Plants raised in summer, are best preserved by re-potting in October into large pots—the larger the better, in light rich sandy earth, and placing them in a cold frame or greenhouse, giving them plenty of air on all favourable occasions. Thus treated they will grow a little during the winter. In March or April turn them out into the open ground, and they will bloom as finely and as early as if they had been planted in autumn. Plants even put out in May will flower the same year. Plant them not less than 4 feet row from row, and 3 feet apart in the row—if grouped in beds, not nearer than 3 feet each way. In May or June when the spikes have grown a foot high, thin them out according to the strength of the plant; if well established and very strong, leave four spikes; if weak two or three. When they are required for exhibition, only one spike must be left. Stake them before they get too high, tying them securely, so as to induce them to grow erect. The most

robust among them will not require a stake higher than 4 feet above the ground level. If the weather is dry they may be watered with a solution of guano, or any other liquid manure poured carefully round the roots, but not on or too near the stem. If fine blooms are required cut off the lateral shoots, thin the flower buds if crowded together, and remove the top of the spike, according to the height desired, taking into consideration the usual height and habit of the plant. By topping be it observed, you increase the size of the flower, but at the same time shorten its duration, and perhaps disfigure the appearance of the plant. The best way of showing Hollyhocks is in the form of spikes, and in judging, the first point should be the individual flowers, the perfection of which consists in the petals being of good substance; while the edges should be smooth and even; and the florets occupying the centre, full and compact, closely arranged, rising high in the middle, and of a globular form, with a stiff guard petal extending about half an inch, or in proportion to the size of the centre ball,

so that the different parts of the flower may present a uniform appearance. The next point should be the arrangement of the flowers on the spike; they should be regular, not crowded together in a confused mass, nor hanging loosely with open spaces between each flower, but so disposed that the shape of each, when fully blown, may be distinctly seen, the uppermost covering the top of the spike. A few small green leaves between the flowers, also give an improved appearance. The third point is colour—the brightest, strongest, and most distinct should stand first, but as it is desirable to obtain shades of all kinds anything new or distinct in this way should be encouraged.

Saffron Walden.

WILLIAM CHATER.

VIOLAS AS BEDDING PLANTS.

THE improved varieties of the Viola now in cultivation must, in future, occupy a prominent position amongst bedding plants, as nothing can surpass them in richness of colour or in general effectiveness. Independently of their continuous free-flowering habit, they are specially commendable on account of their perfect hardiness of constitution and the facility with which they can be increased and wintered; although, however, they stand over winter uninjured in the open ground, and are capable of being divided and increased to any extent during the spring months, I would recommend that cuttings of them be propagated in a cold frame during this month, when every cutting will be sure to root, if put

into a light sandy compost. Thus, with the least possible labour or after attention, we secure a fresh batch of vigorous plants, which will be found to be more satisfactory than divisions. The flowering shoots should be pinched back early in the season, and, afterwards, the plants may be put out upon a border at greater distances apart, until such time as the beds are in readiness for their reception. It is important that these *Violas* should be established in their summer quarters as early in the season as possible, consistently with the removal of spring blooming plants. They naturally delight in a rather strong, rich, moist soil; it will, therefore, be necessary, more particularly in the case of light sandy soils, to secure these conditions for them by introducing fresh turfy soil, enriched with decayed manure, and watering with liquid manure, so as to promote vigour of growth and consequent continuity of bloom. By thus keeping the plants in a healthy growing state they seldom suffer from insect pests or mildew; but, if the latter should attack them, it may be kept in check by dusting with flowers of sulphur. There is now in cultivation a large variety of *Violas*, many of which possess, features of considerable merit. I have found the best to be *Viola lutea grandiflora*, a tall free-blooming kind, good for centre groups; Dickson's Golden Gem, the finest of the yellow class; Cornuta var. Magnificent, a handsome purple variety; C. var. Sensation, deep blue, a good bedder; C. var. Perfection, a well-known variety, possessing good properties as a bedding plant; Blue Bell, a charming variety, resembling, to some extent, *Viola Perfection*. Its blossoms are shaded violet, and the plants, though remarkably compact in growth, are vigorous in constitution, withstanding attacks from mildew better than Perfection. Blue Bell comes into bloom early in the season, and remains in beauty till late in autumn. It is, therefore, a variety which cannot fail to give satisfaction.

Witley Court, Stourport.

GEO. WESTLAND.

Hardy Flowers in France and at Home.—I have had a very enjoyable tour in France. I visited the Botanical Gardens at Amiens, Paris, Chartres, Angers, Tours, Caen, Rouen. At all of them I met with something special and good, and at all I met with kindness and civility. I also got much "spoils." At Angers, M. Boreau was very kind, and gave me a quantity of good Sedums. I think the plants that most struck me were the herbaceous *Hibiscus*—*militaris*, *moscheutos*, *grandiflorus*, &c., which were magnificent. I made the acquaintance of what I think one of the best rock-work shrubs I have seen, viz., *Atraphaxis spinosa*; I saw it first on the low banks of the Bois de Bonlogne, and afterwards I saw it elsewhere. I came to the conclusion that the French gardeners are infinitely ahead of us in ornamental summer gardening. I have never seen anything in England to come near the Park de Monceau at Paris, and the Bosquet du Roi, at Versailles. It was miserable after them to see the strip near Park Lane, with its everlasting Scarlet Geraniums and Golden Pyrethrum. At home here I have some good things still out in the garden, and no lack of flowers. I especially note *Tritonia aurantiaca*, *Convolvulus Scammonia*, *Exogonium Purga*, *Anemone japonica*, *Crocus*, and *Colechicum* of many sorts, *Belladonna Lilies* (never finer than this year), *Solanum jasminoides*, *Erythrina laurifolia*, *Abutilon vexillarium*, *Fuchsias*, *Roses*, and *Asters* in abundance; and among botanical curiosities are *Roscoea purpurea* and *Jaborosa integrifolia*. Among the *Roses* now out, there is none to beat the old single Macartney and Aimée Vibert.—H. N. ELLCOMBE, *Bilton Rectory, near Bristol*.

Free Flowering Cannas.—These ought to be more universally known than they are; for amongst sub-tropical plants none are more effective, especially if planted according to heights and colours which are given below, in three classes. In the first class I will place the dwarfest, in the second those of the middle height, and in the third the tallest. Of the new varieties of the past three years all are not so ornamental in foliage, as some of the older kinds, but they are invaluable on account of their flowers, which, in some varieties, nearly approach those of the *Gladioli* in beauty. One of the finest sub-tropical beds I have seen this season consisted of Cannas, most of which are free-flowering varieties. The outside row was planted with Prince Imperial and Biorelli, the first of which bears fine spikes of bright scarlet; the latter orange-scarlet. In the centre were patches of Premice de Nice, a fine clear canary yellow coloured kind, and Van Houttei, a bright orange-red. This bed was belted with Tussilago Farfara variegata; and the dark red shade, and two shades of green of the Cannas, together with the soft sulphur margin of the Tussilago gave to the whole a charming effect. Flowering Cannas are also of great use in autumn, for if taken from the ground with a good ball of earth, potted, and given one good watering, they will make a fine show of flower for some time when placed in the conservatory or greenhouse. After they have done blooming, they may be cut down to within 3 inches of the bottom, and placed

in any dry cool situation for the winter. In the first class I would place Prince Imperial, bright scarlet; Biorelli, orange-scarlet; Biorelli elegans, indian-yellow; Biorelli splendens, bright scarlet; Michel Bonnett, bright crimson; Gustave Bonnett, orange-scarlet; Mulleri, crimson; grandiflora floribunda, orange; compacta, yellow, spotted red; Ferrandi, bright crimson. In the second class Senateur Chereau, yellow, with red spots; lutescens, yellow; Imperator, dark scarlet, orange-spotted; gigantea floribunda, orange-buff; rotundifolia rubra, orange; Picturata fastuosa, light yellow, spotted red. In the third class Premice de Nice, canary yellow; Auguste Ferrier scarlet and orange; Rendatleri, orange-buff; Deputé Henon, yellow and rosy-red, shaded; Ernest Benary, orange-red; Van Houttei, bright orange-red. There are several other flowering varieties; but they are either too early or too late, so I omit them in this selection.—R. H. B.

Mixed Annuals Sown in Front of the Shrubberies in Kensington Gardens.—In the early part of the season we had an opportunity of noticing the natural and pleasing effect produced by the sowing of mixed annuals over large spaces in front of and even in the shrubberies in Kensington Gardens. The earlier flowering kinds have now done their work of beauty, and have shrunk out of sight, making room for the gorgeous crimson and scarlet of the Love-lies-bleeding and Prince's Feather (*Amarantus caudatus* and *A. hypochondriacus*). These are half hardy plants, but they accommodate themselves so well to our northern climate, that they flourish luxuriantly with us in the open garden, even in "chill October," filling the borders in which they abound with a glow of warm and splendid colour, which is very grateful at this late period of the year. The spaces in front of the shrubberies at Kensington, all aglow with the fiery crimson of these late-flowering annuals, are pleasant to look at just now, as affording a last glimpse of floral beauty when nearly all other flowering plants have withered and passed away. In some places, where these plants are bent down in tangled profusion by the weight of their grand close racemes of crimson apetalous flowers, their aspect is very charming.

WARE'S DOUBLE SWEET WILLIAM.

(*DIANTHUS BARBATUS MAGNIFICUS*.)

THIS pretty Sweet William grows about 12 inches in height and about as much in width. Its flowers are very double and fragrant. During winter even it is conspicuous on account of its round tufts of reddish-coloured leaves. It commences to flower early in June, and continues in blossom until the latter end of September. The mode of propagating is not at all difficult; during the summer months the side shoots may be pulled off and dibbled into some shady spot, and when rooted they may be planted out into their permanent quarters; there let them remain until the following season, when you may again commence propagating as before, i.e., if more plants are wanted.

Single varieties of Sweet William.

Like the Stock and the Wallflower, the Sweet William, even in a single state, finds a place in every garden. It requires but the smallest possible amount of care to produce it in its greatest beauty. If the soil in which it is planted be but fairly good, it will grow and bloom in perfection without any trouble, requiring no special attention; not even the help of a stick to support its heads of bloom. To get the Sweet William in fine form fresh seedlings should be raised every year; the seed should be sown in the open ground thinly, early in May; by so doing it germinates rapidly under the influence of the summer's increasing heat, and comparatively large plants are thus ready for planting out in the autumn. If, however, the seed be sown in a box or pan, or in any confined space, the seedlings should be planted out into some vacant piece of ground as soon as they are large enough to be moved with safety, and then they may be transferred to their permanent places at leisure in autumn. Plants that are intended for the mixed border ought to be very strong before planting out, so as to throw up numerous heads of flower, which will support each other against rain and wind, while small plants throw up one head only, which is almost sure to be broken, unless supported by means of a stick, and tied. Like all plants that produce compact heads of bloom, the Sweet William is most effective when grown in a mass, as then the peculiar evenness of height and flatness of truss that characterise it, are seen to the best advantage. A large bed of it produces a grand effect; scarcely two plants having flowers exactly alike as regards markings, but all equal in size of truss and roundness of pip. Such a bed is worth a long journey to see, and would create no small enthusiasm in the minds of many who have, under the influences of bedding out and other specialities of plant

growth, almost forgotten the existence of the Sweet William and other old favourites. There are several forms of Sweet William in cultivation, the finest being a strain that is a sort of fusion of the old Auricula-eyed and Hunt's well-known variety. Both of these kinds produce large heads of bloom, the Auricula-eyed having, in every case, a distinct white eye, with a margin of some dark colour; but most of the flowers are what is known as saw-edged, that is, jagged and uneven in outline, a great drawback, and one which materially detracts from their beauty. Hunt's strain produces large pips of varied colours, few having white eyes, but most of them have fairly smooth edges. A good combination of these strains now furnishes fine varieties, without these defects, the pips being larger than a shilling; they are produced in large trusses, and of the most varied hues of colour. Usually, this combination produces a majority of light flowers, dark ones being the exception. As a rule, also, the dark-



Double Sweet William.

coloured flowers are smaller and inferior in quality to light ones; but no doubt they are amenable to careful selection, and probably will be improved and become equally good very shortly. A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Double-flowered Variety of *Lobelia pumila*.—This has been one mass of bloom here all through the summer, and the admiration of everybody. Gardeners in our neighbourhood are daily applying for old plants, in order to get a stock of it for next season—a sure sign that its value is appreciated.—RICHARD NISBET, *Aswarby Park*.

An Effective Flower Bed.—I have seen large numbers of flower beds in many different places this season, but the most simple and striking of them all, in my opinion, was one which I saw at Burghley some three weeks ago. It was diamond shaped, thickly edged with *Iresine Lindenii*, a band of which also crossed from each corner to the centre; the divisions thus formed were filled with *Calceolaria aurea floribunda*, whose large heads, slightly elevated above the pinched-in *Iresine*, gave the whole quite a charming and striking appearance.—JOHN ADAMS.

A Selection of Roses for a small Rosary.—As I am about planting a small rosary, I shall be obliged if you will let me know the names of a few of the choicest Roses for half-standards and standards, for the southern suburbs of London.—A. J. P. [Try Alfred Colomb, Maréchal Niel, Charles Lefebvre, Madame Rothschild, La France, Louis Van Houtte, Madame Victor Verdier, Comtesse d'Oxford, John Hopper, Duke of Edinburgh, Sénateur Vaisse, Pierre Notting, Mlle. Marie Rady, Maurice Bernardin, Victor Verdier, Souvenir de Malmaison, Général Jacqueminot, Mrs. Rivers, Marie Baumann, and Xavier Olibo.]

Plants Existing Under Difficulties.—In a piece of rock-work here, we have a large mass of flint, on the top of which an Elder bush is growing in a small fissure, not wider than the blade of an ordinary pruning knife, and containing apparently no soil, the only means of sustenance being derived from rain, or from moisture condensed by the cold stone. The amount of growth is, of course, comparatively little; indeed, in five years the bush has not grown more than 1 foot in height. During the last drought it was apparently less effected than plants more favourably situated. The importance of stones in collecting and retaining moisture, therefore, can scarcely, I think, be over-rated.—J. GROOM, *Henham*.

Antirrhinum numidicum.—Having had the curiosity to obtain seed of this so-called novelty, announced last autumn with a flourish of trumpets by a Continental firm located not far from the Mediterranean, it may interest some of your readers to learn that it proved to be a very old acquaintance indeed, viz., *Linaria triphylla*! The practice of introducing an old plant under a new and incorrect name is itself deserving severe reprobation, but in this case the fraud is aggravated by the grossly exaggerated description given of the plant, and, under which, no one would recognise the weedy Toadflax just named. It is described as rivaling, if not exceeding in beauty the finest Pentstemons! How far that description applies to *Linaria triphylla*, many of your readers can judge for themselves.—W. THOMPSON, *Ipswich*.

THE FRUIT GARDEN.

ARRANGEMENT OF FRUIT FOR DESSERT.

I HEARTILY commend the remarks of your correspondent "W. T. P." (see p. 267), to the consideration of all interested in dishing up fruit for dessert, especially to secretaries of societies, who will shortly be engaged in framing prize lists for next year's exhibitions. This, I believe, would be the means of bringing the matter fully before the public. The arrangement of flowers on dinner tables has received much attention; but fruit comparatively little; and yet fruit is of even more importance than flowers, inasmuch as it is intended to gratify the taste as well as please the eye. The proper way to gather fruit with the stalk attached to it, simple as it is, is not so well known as it should be; I speak, of course, of small fruit, and this is a point to which young gardeners should pay attention. What grand dishes of fruit have been disfigured or spoilt between the garden and the dinner-table! I have frequently taken studious care to prevent fingers from touching the fruit, so that it might appear on the table in its best condition, and how mortified have I been afterwards to find it ruined through handling. I allude more particularly to Strawberries; but the same thing has happened with Raspberries, Currants, and with almost every kind of fruit. What are termed soft fruits ought to be gathered without the least touch of the finger as far as the fruits are concerned, and they should also be gathered quickly. With high-class fruit, for which a high price is expected, it would be money well spent to pay unskilful gatherers to stay outside the garden. When a boy (yes, and a very small one too), I had to be amongst the Strawberry beds, covered with dew, by four o'clock in the morning; one learns quickly when young, and I soon learned how to pick Strawberries. Simple as the operation is, however, I am not sure what words to employ in order to make it intelligible to others. Do you know how to cut a wire with pliers? if not, turn your fore-finger and the sharp nail of your thumb into the stalk of the Strawberry dexterously, and you will have learned the whole process; take the fruit in the hand just as one does a young shoot when pinching it; do it as if handling the "apple of your eye." The calyx forms ample protection, and if the finger and thumb are gently placed behind it, and the stem cleverly nipped, the fruit may be placed in the basket without a finger bruise of any kind. The great fault consists in fruit having to be changed many times after gathering, thus rendering useless all care taken with it in that operation. What we want is some vessel in which to gather the fruit and place it on the table, and then to hand it round, which would be a very good plan. What, however, would be better still, would be to have the dessert placed in small quantities on the table after all joints had been removed. We must, however, first get out of our heads the necessity of having huge ugly formal pyramids of fruit. On the contrary, as with flowers, let us fall back to the good old-fashioned plan of arrangement, one in which mathematical exactness is dispensed with. I have said that fruit should be served at table in the same vessel in which it is placed when gathered. We cannot, however, expect to have costly china or glass dishes or stands in which to gather it; but we might have an ornamental contrivance of a commoner kind that would fit into a more costly service. I want to go one step further, and say that no one but the gardener should be allowed to have anything to do with the fruit, which should be placed by him on the dining-room table, where the dishes should be set, and in them he should place the fruit. One most important matter about which I wish to speak, is that of trimming and garnishing, which at first seems of little moment, yet, when looked into, becomes a serious consideration; for, be the flavour of some kinds of fruit ever so good, it is easily spoilt by being placed in contact with strongly-scented leaves. I have seen Laurel-leaves, Bay-leaves, Kale, and a score of other things, used for this purpose, all of which cannot be too strongly condemned; in fact, any leaves that give off odour of any kind are unfit for garnishing. But, if scented foliage is unfit for association with fruit, what shall I say in regard to odoriferous flowers? A fruit is prized for its own flavour; why then spoil it with that of either leaves or flowers?

Hardwicke Grange.

JOHN TAYLOR.

THE INDOOR GARDEN.

TREATMENT OF BROMELIACEOUS PLANTS.

COULD you kindly give me a little instruction on the culture of such plants as *Billbergia*, *Nidularium*, *Vriesia*, and others of that class? Please to answer specially the following questions, concerning which I can find no such information as I desire.—G. W. CHEESMAN, *Ansonia, Connecticut*. 1. Do they ever flower a second time from the same growth?—To this question we answer no: but in the case of *Vriesias* the old growth must be left, as the new shoots come from the axils of the leaves. When the new growth is half-grown, the old leaves may be removed, and if two or three growths make their appearance, split the stem down, and let each have some portion of the roots. All young plants should be potted in small pots firmly. 2. As they bloom much finer singly, and if they only flower from the new growth, when should the young plants be removed from the parent stock to most quickly make blooming plants? when small? or when full grown?—Single plants flower and look best—a remark which applies more expressly to *Billbergias*, *Guzmannias*, *Nidulariums*, *Echmeas*, and *Encholiriums*. The young growth of some of the *Tillandsias* and *Pitcairnias* is almost fully developed before the old plant flowers. In this case it is better to cut the old growth away and leave the new; in that case, it is unnecessary to re-pot every season; otherwise, let the young growth remain until it is half grown, when it will be making roots on its own account. If taken off, and kept in heat, it will flower the next season. 3. When should they be rested?—They do best when kept growing all the year round; thus treated, they never miss flowering. 4. If they only flower from their new growth, should the old growth be removed after the new growth is started, and, if so, when the new growth is small or matured?—The answer to this question is embodied in that given under question 2. 5. Do they thrive best in the sun, or somewhat shaded?—They will do exposed to the sun; but, as they naturally grow in dense shade, they succeed best shaded, with the exception of *Dyckias* and what the Germans call *Hechtias*. These like sunshine, but will do very well treated as the others. The best soil for them is three parts turfy peat, one part very turfy loam, and one of silver sand, and a free mixture of burnt ballast. To this their roots cling with seeming fondness. With the exception of the larger-growing kinds, viz., *Paya grandiflora*, *P. chilensis*, *Pourretia coarctata*, and *Greigia sphecelata*, Bromeliaceous plants are all fond of heat, moisture, and slight shade. Even *Dyckias*, though they will do very well in a greenhouse, do better in a stove. It may be mentioned that because these plants will withstand a good deal of ill usage, they are seldom well treated; but if managed in a rational manner, and not over-watered when first separated from the parent plants, they are exceedingly beautiful. There are about 100 species in cultivation in this country, and many more are enumerated in catalogues. J. CROUCHER.

PLEIONES.

("INDIAN CROCUSES.")

FEW of our smaller growing Orchids are more beautiful than these little mountain gems when well-grown, and at this season of the year they form valuable decorative plants, besides affording a supply of choice cut flowers. All the species may be successfully cultivated in an ordinary plant stove, and this adaptability makes them even more welcome to our collections, and, as the price of these plants is now within the reach of everyone who has convenience for their treatment, they deserve to be more generally cultivated than at present. Well-established plants produce a good supply of off-sets, and by dividing the plants year after year, a good stock is readily obtained. They will be found to grow best in a compost of fibrous peat and chopped living *Sphagnum* Moss, to which sufficient coarse sand or grit has been added to keep the whole fresh and open. The pot or pan employed must be perfectly clean and well-drained, placing a layer of Moss over the crocks to prevent the compost from washing down. The pseudo-bulbs should be potted as soon after the flowering season is over as possible, and then placed on a shelf or stage near the light to make their growth. Do not water them too freely until the roots from the base of the young growth obtain firm hold of the compost, but, after this occurs, they may be watered more freely with advantage. A moderately cool and airy atmosphere suits them best during the summer, and repeated syringings are essential to keep them free from red spider and thrips, to which they are, unfortunately, rather liable. Every inducement must be given to enable them to make a vigorous growth during the spring and summer, for on this the free and profuse production of their delicate flowers depends. There are four species commonly met with in good collections, the first to open its blooms being *P. Wallichiana* or *P. precox*, as it is

sometimes called in allusion to this early-flowering habit. This is the largest-flowered species in the genus, bearing one or two flowers on a stem, of a rich lilac-purple colour delicately veined; the inside of the lip is yellowish, with about five rows of comb-like teeth running in longitudinal lines down the centre. This plant generally blooms early in October, and is closely followed by *P. lagenaria*, which has much smaller flowers of a similar lilac-purple tone, with delicately-veined segments, but the lip is very distinct, being richly blotched with carmine, and the rows of pectinate teeth being more fully developed. *P. maculata*, again, resembles the last in form, but is still smaller, with milk white sepals and petals, and a white, yellow, and carmine-blotched lip. This is one of the most delicate and beautiful of the whole group, and is rather rarer than the last-named. All the above species have purplish or brown bluntly-rounded pseudo-bulbs, covered with greenish warts; but there is yet another species with smooth tapering pseudo-bulbs of a dark green or purplish colour. This is *P. humilis*, the smallest of the whole group, and deservedly a favourite wherever it is grown. Its flowers are of the most delicate lilac, the margin of the lip being white, and as prettily fringed as the finest lace. The old pseudo-bulbs of this plant frequently throw off from twenty to thirty little bubblets, which fall on the fresh mossy compost, and soon form roots and plants. The latest introduction to this genus is *P. Reichenbachiana*, from Rangoon. The flowers are borne one or two on a short scape, the segments being rosy-lilac, and the lip tinged with faint purple and fringed with crimson in front. Popularly these delicate little plants are known as "Indian Crocuses," not a very appropriate name, yet they closely resemble in colour, habit, and time of flowering some of our hardy Croci. From a botanical point of view they may be regarded as a deciduous section of *Cœlogyne*, with which genus they agree in all essential characters. F. W. B.

LEAVES FOR HOT-BEDS AND LEAF MOULD.

THOUGH hot-water pipes have superseded the hot-bed generally, the annual leaf heap has not been dispensed with altogether, but still forms an important adjunct to the forcing department wherever leaves are procurable. In many a ducal and lordly establishment the Melons, Cucumbers, Rhubarb, Seakale, early Potatoes, and salads, not to speak of the hordes of bedding stuff, early forced flowers, and other things which go to supply the various departments, are produced in an out-of-the-way corner, where the rakings and sweepings of the avenues, walks, lawns, and other places are accumulated every year for the purpose of forming a fund of manure for universal use, in case other precarious sources, which generally afford the garden a supply, should fail. Decayed leaves, otherwise termed leaf mould, is a lost manure to all but the gardener, and he does not use at the most more than a fractional part of the available quantity on any estate. On waysides, behind edges and walls, in gullies and other places in the woods, the fallen leaves collect in tons every year, and are left to lie and rot, when, with very little labour, they might be collected and incorporated with the manure of the farm, or formed into compost heaps, to be afterwards employed as a rich and nourishing dressing to the land. Leaf-mould, either by itself or mixed with other soils, is eminently suited to the wants of most plants; for, though it is not a highly stimulating manure, it encourages root action in an extraordinary manner, and indirectly in this way promotes the growth of plants in a high degree, when, in some cases, more concentrated manures would, to a great extent, remain inert. To heavy soils, if assisted with lime, it can hardly be applied in too great a quantity for a time—but it is possible to overdo it, as has been the case in many kitchen gardens, where the original loamy staple has almost disappeared, under the continual application of leaf-mould or humus, rendering the soil quite unfit for the production of some crops. It is, however, chiefly with the utility of leaves for forming hot-beds that we have to deal, for it is after they have done duty in that way that they come in as a fertiliser. No other fermenting materials are so easily procurable as tree leaves, and none are so well adapted for making hot-beds; as when used in sufficient bulk they will afford a temperature sufficiently high for any purpose; and, while they never ferment violently, they retain their heat steadily for a longer period than any other material that can be employed, and this without turning or adding to, from January till December. Oak leaves are the best that can be used for hot-beds, and sometimes they can be procured alone in Oak plantations, but generally they are only procurable in a mixed state, and yet do very well. I may state that Beech leaves, which can frequently be collected by themselves, are about the worst that can be employed, either for hot-bed making or forming leaf mould. They are dry and hard, and do not ferment readily, and, when they come to be employed as a manure, the husks of the Beech mast generate Fungi in the soil worse than anything I am acquainted with. I have seen borders to which

the mould of Beech leaves had been added white with the mycelium of Fungi long after it had been applied. Hundred of tons of leaves are sometimes formed into hot-beds by building them up in a heap of a parallel or square form; but such a bed requires a good deal of time and labour to make, and it is needless adopting such a plan if there is a sheltered hollow conveniently near, or if a rough pit can be found, into which the leaves can be shot without trouble. Such a plan will also conserve the heat much better. At one large establishment I am acquainted with, an exhausted quarry is utilised in this way, and, when filled, the leaves afford a long-sustained store of heat, and a large surface for the accommodation of hand-lights and portable frames, in which large quantities of vegetables and other produce are turned out during the year. In autumn the spent leaves are carted out, when the estate horses are not otherwise employed, to the manure heap, and the quarry replenished again with newly-fallen leaves. Leaves for hot-beds should be collected as soon as they fall off the trees if we want to get the full benefit of their heating power, and in forming the bed they should be spread regularly and trodden. Leaves afford a steady temperature of from 90° to 100°, according to the depth of the bed, for nearly a whole year. For striking cuttings in, nothing excels such a bed. Melons also will grow and fruit well in such quarters till November; and Cucumbers for nine months in the year, with the assistance of linings in spring and autumn. In many large gardens, in fact, no other conveniences exist for cultivating such crops. Bottom-heat from leaves or fermenting materials generally, when steady and not too violent, is of a far more healthy nature than that afforded by hot-water pipes; hence many cultivators, who employ pipes by preference for top-heat, still retain the leaves for bottom-heat in Pine pits and other such places. The advantages of the hot-water system are convenience and cleanliness; but with beds formed entirely of leaves—Oak if possible—the trouble of renewing occurs only once a year if the bed is deep enough. I believe in most of the extensive Pineries at the Royal Gardens, Frogmore, the hot-beds are still formed of Oak leaves, and the Pines there have always been celebrated for their great weight and excellence; only lately we hear of fruits from those Pineries weighing close on 10 pounds apiece, grown in this way. The cloche, which is becoming more common in this country than formerly for the culture of early salads and seeds, should be supplemented with a leaf-bed, say about 2 feet or 18 inches thick; for a very gentle heat is sufficient for such things, and a moderate quantity of leaves would form a bed of sufficient breadth to accommodate as many cloches or hand-lights as would be needed in a very large establishment. J. S. W.

SELAGINELLAS.

To the descriptive list of Selaginellas given in THE GARDEN, Vol. IV., p. 353, allow me to add the following:—For carpet beds or borders nothing is better than *S. Kraussiana* or some of the variable forms of *S. Martensii*, which grow freely, are of a dense habit, and always present a fresh and cheerful appearance. I have seen these plants used with good effect for covering bare walls in plant stoves, by fixing galvanised wire netting an inch and two from the wall, and filling the intervening space with peat and Sphagnum, into which rooted pieces of Selaginella were planted and syringed daily until fairly established.

Such a wall, however, is always more troublesome than one covered with *Ficus repens*, or its smaller variety *F. minima*. Some of the Selaginellas make fine specimens when on cones or cylinders formed of peat and chopped Sphagnum Moss; for the generality of species, however, the flat pans generally used should be employed. The following species may all be seen in the large Fern-house at Kew.

S. Galeottii.—This is a loose rambling species, of a deep green tint, but, being distinct, it is well worth growing, and under good culture it makes a nice plant. It is a native of Mexico. In some gardens it is grown under the name of *S. Schottii*.

S. patula.—This is a dwarf creeping species, of a light but bright green colour, and one that grows well in a flat pan, in which it forms a dense mass. It does not appear to be so generally distributed in gardens as it deserves to be.

S. hæmatodes.—This very effective caulescent species grows from 12 to 18 inches in height, and forms large branched triangular fronds nearly a foot across, and is of the freshest green colour imaginable. It somewhat resembles *S. erythropus*, but is in every way larger and less spreading in habit. When well grown it is fully equal to any Fern as regards decorative purposes, and one would be tempted to cut its fresh green fronds for arranging along with cut flowers, only that it and nearly all other Selaginellas so soon curl up after being cut unless laid flat on Sphagnum Moss, wet sand, or other moist material.

S. inæqualifolia.—This is a robust caulescent or erect-growing plant, often 2 feet or more in height. Its broad growth is of a fresh green colour; and, although the plant is apt to produce a large proportion of fertile branches or spikelets, which detract somewhat from its ornamental appearance, still it deserves a place in every collection.

S. fulcrata (africana).—This, one of the best of all the caulescent species, produces dense masses of broad feathery fronds, which, in well-grown specimens, are often 12 to 16 inches in height, and of a fresh green colour, with red or purplish stems. It is a native of Western Africa.

S. viticulosa.—This is a pleasing creeping or succulent species, with a light feathery appearance, quite different from many of the others. It makes a nice specimen grown in a flat pan, and is well deserving of culture. It is a native of Columbia, and succeeds well in a moderate temperature.

S. ascendens.—A compact creeping or sub-erect species, with branches arranged in a divaricate manner. It is of a deep rich green colour, lighter at the apices

of the branches than elsewhere; when well grown it makes a very effective decorative plant.

S. Griffithii.—This is an elegant creeping species, the tips of the fronds of which are gracefully recurved. It is distinct in appearance, but requires a warm and moist atmosphere to grow it successfully. It is a native of Borneo.

S. Wallichii.—This is one of the most robust plants in the whole group, producing great branching fronds from 2 to 3 feet in length. It is caulescent and of a deep shining green colour, the tips of the branches each bearing slender pale green spikelets. When liberally treated this makes a noble specimen. It is a native of Penang and the Indian Archipelago.

S. denticulata.—This plant is not known or grown in gardens so much as it deserves to be. It may now be seen on the borders of the walk leading to the rockery at Kew, where it forms bright patches of the most vivid green, and creeps close to the moist earth or mossy



The Tree Selaginella (*S. cæsia arborea*).

stones. It may, possibly, prove hardy in sheltered positions, and, if so, it will prove a favourite wherever it is grown.

S. pilifera.—This pretty plant belongs to the rosulate section. Its fronds all radiate from the centre in a circle, and are of a fresh pale green. When carefully cultivated it is one of the most pleasing members of the whole group, but it is rare in collections.

S. cæsia arborea.—This plant, of which we give an illustration, grows well planted out in a moderately cool fernery. We have seen it drooping 10 or 12 feet from Tree-Fern trunks. B.

WINTER FORCING THE LILY OF THE VALLEY.

WITHIN the past three years (says Mr. Peter Henderson, in the *American Agriculturist*), the demand for the flowers of Lily of the Valley has increased to such an extent, that though the importation of roots has probably trebled each year, the price of the flower is still quite as high as when the forcing first began. The price last season, from December to May, averaged 10 dollars per 100 sprays at wholesale—a price which, when the bulk or weight of the flower is considered, is something wonderful, and probably higher in proportion to the bulk than that of any other flowers, unless it may be those of some species of Orchids. The high price of the flowers is due to the fact that the success of the crop is not always certain. The failures which attend it are mainly owing to the use of improperly developed roots. As with other similar plants, a certain size or development of the crown, or underground bud, is essential to produce the flower. What that size should be, is not, even with the most experienced, always easy to determine. In the Tuberose, for instance, the Japan, and some other Lilies, we find that bulbs that are less than an inch in diameter are not certain to flower. These rules, however, as to size and shape are not given as certain, for hardly any of us have had experience enough to say with accuracy at what size the crown of the Lily of the Valley, or the bulb of a Tuberose or Lily will not flower, although we may say with considerable certainty, if the crown is large, that it will do so. It is the want of this knowledge that, in my opinion, has made the forcing of the Lily of the Valley so uncertain; thousands of roots have been imported that have not given flowers sufficient to pay the first cost of the roots. The cost is about 25 dollars per 1,000 for single crowns; and, as each produces but one flower-cluster, it will be seen that nearly all should flower to make the business of forcing fairly profitable, even at 10 dollars per 100. We last year imported what seemed a very fine lot, which, on coming into flower, showed that one-third were "blind," or flowerless. As in forcing the Hyacinth, and other similar bulbs, crowns of the Lily of the Valley should be covered up outside for a few weeks before being brought into the greenhouse to force. Those we flowered last year were imported about the middle of November, and were then packed closely together in light rich soil, in boxes 3 inches deep. These were covered up outside with hay until the 1st of January; they were then brought into a greenhouse, facing the north, where there is no direct sunlight at that season. The temperature was kept at about 70°, with a moist atmosphere, and by the 1st of February they were in full flower. The Lily of the Valley could be grown finely in a Wardian case, as it would there get the proper light, with the necessary damp atmosphere. When grown in greenhouses exposed to sunlight, it is necessary to shade the glass very heavily. When the flowers are about to open, they should then have light to give the leaves a healthy green colour.

WINTER-FLOWERING ODONTOGLOSSUMS.

ODONTOGLOSSUMS are favourites with most Orchid-growers, as they may be grown without any great expense either of fuel or labour. They are, indeed, in every sense of the word, "cool Orchids," and the best kind of erection in which to cultivate them is a low span-roof house, some 8 feet high in the centre, with side walls about 5 feet. The breadth of the house may be 12 feet; this gives 4 feet for the side benches or tables, and 4 feet for the path. Provision must be made for thorough ventilation, covering the openings with perforated zinc or wire gauze so as to exclude cold currents of air or draughts. A house of these dimensions, and 40 to 50 feet in length, may be heated sufficiently for Odonoglossums by a flow and return pipe passing round it under the side-benches. Or, in other words, a house in which these plants may be grown perfectly, requires no more piping than is considered necessary for heating an ordinary greenhouse. The benches should be of slate, on supports of either iron or wood, the former being preferable on the score of durability. These benches should be covered either with Derbyshire spar or Cannel-coal broken up into small nodules, upon which the pots should be arranged. Cannel-coal always appears clean, and its dull black colour is not at all conspicuous, while it efficiently answers every purpose for which spar or shells are used. Most Odonoglossums grow

freely in a compost of fibrous peat, some dried horse-droppings, chopped Sphagnum Moss, and sand. The pots should be thoroughly clean and dry, and plenty of drainage should be used, in order that all superfluous moisture may pass away readily. They require an abundant supply of moisture when in a healthy growing condition; but, like other plants, they are injured by stagnant water at the root. The following species are the most worthy of cultivation for their winter-flowering qualities.

O. Alexandræ.—This is one of the most beautiful species in the genus, and deservedly popular with Orchid-growers. Its flowers vary from pure white to white suffused with rosy-lilac; they are heavily blotched on the lip and sepals with brown. A remarkably fine specimen of this species at Meadowbank bore, some time ago, 120 flowers, 56 of which were on one spike; and I saw many plants of this species growing in a brick pit at Meadowbank last summer, in very fine condition. This species should be grown by the dozen where there is convenience, as, where a good stock is kept, it may be had in bloom throughout the year with but little intermission. Its flowers last a long time in beauty. After potting, this and all other Odonoglossums should be surfaced with a layer of fresh green Sphagnum, which conceals the compost, gives the pot-tops a clean and fresh appearance, and maintains an equable state of moisture at the root.

O. cristatum.—This is not so showy as some species; but it is, nevertheless, highly interesting, and well worth cultivating. Its flower-spikes are slender, often branched; and the flowers yellowish, heavily blotched with purplish-brown. The crest of the lip is white, and in some varieties a large proportion of the lip is also white. It flowers freely during the winter, and lasts a month or six weeks in perfection.

O. Cervantesii.—A very pretty dwarf species, introduced from Western Mexico in 1845, and often known in gardens as *O. membranaceum*. It has small, angular, one-leaved, pseudo-bulbs, and produces a flower-spike from 4 to 6 inches long, bearing four or five delicate membranaceous flowers, more or less, of a soft rosy colour. The bases of the floral segments are marked with transverse bars of brown or brownish-crimson, the lip is white. It is a pretty little species, well worth growing, and lasts from three to four weeks in flower.

O. cordatum.—A distinct species, found in Mexico and Guatemala, and introduced to this country about 1837. In bulbs and foliage it somewhat resembles *O. maculatum*, but is very distinct from that species. When well established it bears numerous erect spikes of flowers, the sepals and petals of which are about 1½ inches long, lanceolate, the apices being attenuate, and often wavy. In colour they are very remarkable, being heavily blotched with a dark brown (in some varieties of peculiar richness) on a ground colour of pale greenish-yellow. The lip is heart-shaped, of a white colour, blotched, and often margined with brown, and furnished with a pubescent bi-lobed crest.

O. roseum.—This species flowers very profusely during winter and spring, lasting from three to four weeks in perfection.

O. grande.—Though an old, this is a truly magnificent species, which blooms during the autumn and winter months. This, *O. Insleayi*, *O. citrosum*, *O. Krameri*, and *O. Phalaenopsis*, like a few degrees more heat than the generality of Odonoglossums, and will be found to succeed better in a Cattleya-house or in an intermediate temperature rather than in the cool house. *O. Phalaenopsis* is especially sensitive to either extremes of temperature, or to stagnant moisture. Well-established plants of *O. grande* make fine subjects for exhibition, and produce very large flowers of golden-yellow, heavily blotched and barred, which are in great profusion when the plant is well grown. No other Odonoglossum is so effective as this; and it has the good quality of retaining its gorgeous beauty for a considerable period.

O. luteo-purpureum.—Of this we have in cultivation several forms, which are frequently sold and named *O. radiatum* or *O. Hallii*. It is a fine plant, and good specimens of it bear from twenty to thirty flowers on a spike 4 or 5 feet long. A fine specimen of the variety called *Hallii* flowered at Fernhurst, and produced thirty flowers, some of them 3½ inches across, on a branched spike nearly 5 feet long. Three smaller spikes were borne by the plant at the same time. The sepals and petals vary greatly in breadth in different forms, and are of a yellow colour heavily blotched with brown. The lip is broad, with a white fimbriate margin, the disc being blotched with brownish-crimson; some varieties of this plant are richly coloured.

O. Insleayi.—This is another fine winter-flowering species from Mexico, somewhat resembling *O. grande* in habit. It is a very free-flowering species, the sepals and petals of which are yellow, barred with brown. The lip is of the richest golden-yellow, often spotted with crimson. It flowers all through the dull season of the year, and lasts in beauty from three weeks to a month.

O. Pescatorei.—This lovely species, like its congener *O. Alexandræ*, blooms at different times during the season. I have

recently seen it in great beauty in several places, and its pearly blossoms are doubly valuable at this dull period of the year. There are several varieties of it, some nearly white, others spotted and blotched with dense purple, but all beautiful. I measured a flower of it the other day in Lord Lonsborough's fine collection at Surbiton, and found it to be fully 3 inches across. This is one of the finest varieties I have seen, its sepals and petals being very broad, and of good substance and colour. This plant roots vigorously in the compost above-named, and grows well in the cool house. It was introduced from New Granada about 1851, and is one of the finest species in this beautiful genus. It flowers from three to five weeks.

O. pulchellum.—This pretty little white-flowered species from Mexico, was introduced some time before 1841. There are several varieties of it, some bearing flower-spikes very little larger than those of the Lily of the Valley, while others bear flowers an inch in diameter. The sepals and petals are of a pure crystalline white. The lip is bent nearly at right angles, and has a crest shaped like a **W**, of a golden or lemon-yellow colour, spotted with crimson. The flowers are borne nine or ten together on erect spikes, among dark, grass-like leaves. It is a profuse bloomer when thoroughly established, and its fragrant flowers form a very elegant addition to bouquets. It lasts a month or even six weeks in perfection.

O. Rossii.—This, like *O. Cervantesii*, is a very dwarf species. Still, one variety of it, named *superbum*, bears very fine flowers; its blossoms appear, two or three together, on a spike 5 or 6 inches long. The sepals are of a creamy white colour, spotted or blotched with purplish-brown; the petals, broad, pure white, barred transversely with purple; the lip, pure white, with a golden crest. This pretty little species should be in every collection. It flowers about this time of the year, or a little earlier, and lasts about a month in flower.

O. triumphans.—This is a very rare plant, and, at the same time, one of great beauty. It may be considered the best of the yellow-flowered section, if we except *O. grande*. Its flowers are from 3 to 4 inches across, and are borne on a nodding spike. The sepals and petals are of the richest golden-yellow, blotched with brown. The lip is white, with a golden crest, and the apex tipped with rosy-purple. This valuable plant blooms at different seasons, but generally during the winter and spring. In habit, it somewhat resembles that of *O. Pescatorei*, and the bulbs are sometimes spotted with brown, as in that species.

O. Uro-Skinneri.—This has large speckled pseudo-bulbs and broad foliage, and is altogether distinct from most of the other species, both in habit and flower. Like most other Orchids, it varies considerably in the size and colour of its flowers, some varieties being very richly tinted. The sepals and petals are yellowish-green, more or less heavily blotched with purple-brown. The lip is broadish, cordate, of a white colour mottled with rose. This species grows well in the coolest house, but requires an abundant supply of moisture nearly all the year. It bears from ten to twenty flowers on spikes from 2 to 3 feet long, when well established and in good health.

O. Bictonense.—This is another species from Guatemala; and one which bears numerous erect spikes during the winter and spring months. These spikes are from 18 inches to nearly 3 feet high on good specimens, and bear fifteen to twenty flowers, which open in gradual succession. The flowers measure about 1 inch across, and are of a yellow colour blotched with brown. The lip is often white, and sometimes of the deepest rose. It sports into several varieties, the best of which are very ornamental.—*The Gardener*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Celosia pyramidalis.—I see you allude (see p. 330) to my plants of this *Celosia*, of which I have had samples over 4 feet in height and 2 feet 8 inches in diameter, grown in 8-inch pots. The way in which I grow them is as follows:—I sow the seed in a pan in a hot-bed in March, and when the young plants are large enough I pot them off into thumb pots and shift according to size. The soil which I use is leaf mould and loam, a little charcoal, and sand. I water copiously, and occasionally with liquid manure, and the result is most satisfactory.—*CHARLES FRISBY, Blankney*.

Vanda cœrulea.—This charming *Vanda* is now gorgeously in bloom here, each spike bearing, on an average, from ten to twenty blossoms, the sepals and petals of which are delicate azure blue. This fine *Vanda* is considered by some to be a more difficult plant to cultivate than *V. tricolor*, *V. suavis*, or *V. gigantea*; but here it thrives perfectly treated as these are, and is certainly a more profuse flowerer than any of them. Like its associates, it is growing in an oak-wood basket or crate entirely filled with healthy Sphagnum, which is elevated so as to form a pyramid.—*J. Mura, Clonelford*.

Propagation of Cyanophyllum.—Can the top of a *Cyanophyllum* be propagated on the old plant, as in the case of a *Dracœna*, by removing a ring of bark and placing moist Sphagnum Moss around the incision?—*T. M.* [You might possibly succeed in striking *Cyanophyllums* in the manner just alluded to, but a better and quicker plan would be to cut off the top and treat it as an ordinary cutting, by inserting it in a pot of sandy earth and plunging it in a genial bottom-heat, under a close case or shade. Sufficient humidity must be kept up to prevent the foliage from shrivelling, and then success is reduced almost to a certainty.—*B.*]

THE GARDEN IN THE HOUSE.

POT PLANTS IN ROOMS.

Few floral ornaments look prettier in sitting-rooms than well-grown pot plants, which have a great advantage over cut flowers, inasmuch as they last longer in perfection. To townspeople, who have no gardens or glass houses they are a real boon. Plants of all kinds, suitable for rooms, may be obtained in Covent Garden Market, but being, as a rule, reared tenderly in heat, when placed in their new quarters they soon drop their blossoms. Avoid, therefore, plants brought direct to the market from a stove or other house much heated, and select such as have been brought up hardily, for no care will keep plants just out of a hothouse fresh or healthy looking; the sudden change from heat to cold is certain to make them flag. Having made sure that the right sorts of plants have been obtained, the next thing to be considered is, how the pots are to be concealed, as common garden-pots are anything but ornamental. To remedy this evil, some set their pots in paper covers of different colours; others slip them into china pots. Rustic covers are also sold for hiding pots while some conceal them in the following manner:—A bundle of common Brake Fern is obtained, and the ends of the Fern fronds cut in a slanting direction with a sharp knife, are inserted in the soil with which the pot is filled, close to the rim, over which they are broken, so as to make them droop and hide the pot. For those who may not like this plan, and who will not go to the expense of china pots, a new improvement on the plain rustic expanding covers has lately been introduced, differing only from the old style in being ornamented with artificial Ivy, Vine, and other varieties of leaves which tend to give it a pretty appearance. Such pot-covers are well suited for plants in halls, or for ordinary use; but, for the dining-room and dinner-table, they should be of china, than which nothing is more effective. Some are made to stand on a table or bracket, painted in pairs to match; while others are mounted singly, on tripods of iron or wood. I have seen a design made of bronze to stand on a table; at its base were two china pots, and raised about a foot or 18 inches, supported on a pillar of ornamental bronze, was another china pot. Being of bronze this stand was probably intended for the hall or dining-room, as I also saw several in ormolu, which would look lighter for drawing-room decoration. After plants have been placed in such ornamental pots or covers, the surface of the soil in which they are growing should be covered either with silver sand or Wood Moss; if, with the latter, and any of the plants happen to be Ferns, care should be taken that the Moss does not cover any of the young fronds. All plants should be removed to the conservatory at night, if there is one; if not, into some room in which no gas has been burning. It is bad enough to keep plants in a gas-lighted room for any length of time, but, after the gas is turned out, they should be removed, as the atmosphere being still charged with its fumes sadly injures them. In the morning water should be given them if they require it. Palms and other fine foliaged plants should have their leaves sponged over with water every morning, and the flowers of *Pelargoniums* and similar plants may be made to last for a long time, if a drop of gum, such as is used for cut flowers, is dropped into the centre of each bloom. By observing these little items, plants may be kept in good health just double the time they otherwise would be. Plants look well set on brackets, though this style of decoration is not often resorted to; I am certain, however, that if tried, a good effect would be the result. Brackets may be purchased made of different materials; some consist of terra cotta, others of china; some are made of wrought iron, painted to imitate bronze, others consist of Swiss carved wood, and others are gilded. Some brackets are fixed flat against the wall, others are made to fit into corners. Those made with a hollow, into which the pot can be dropped out of sight, are much the best for upright-growing plants; but where an Ivy-leaved *Pelargonium*, or any drooping plant, is employed, it does not matter, as the foliage of the plant, if a good specimen, quite conceals the pot from view. One of the most effective plants for this style of decoration is a large and handsome specimen of *Asplenium flabellifolium* (Fan-leaved Spleenwort). No one who has not seen a plant of this so placed can have any idea of its beauty.

A. HASSARD.

LAST BOUQUET OF THE SEASON.

OCT. 6.—*Mrs. Ruralist* has just brought me a bouquet for my library table, and says "I think this will be the last bouquet of this season cut from the garden, as the air is chilly, and we shall probably have a frost to-night." We have already escaped two weeks beyond the usual time of our first frost, still this notice of the "last bouquet" from the garden is not welcome tidings, even though expected, and long delayed. As I look upon the bouquet before me, which is composed of Tuberoses, scarlet Sage, and rose Geranium leaves, I am

reminded of something which I read a year or two ago about "flowers on the table," urging the importance of making the table at meal time look pleasant and inviting every day, instead of occasionally, when there happens to be company about. I do not recollect the exact arguments used by the writer referred to, but remember they were forcible and well put, and it is to be hoped many a housewife has heeded the advice given. I know of at least one who would as soon forget the more important dishes of a meal as the one or two bouquets of flowers which always mingle their fragrance with those coming from the staffs of life. Of course it is not to be supposed that every family can have a conservatory to supply the table with bouquets of fresh flowers during the winter, but the woods and fields furnish abundant materials if nothing of the kind has been produced in the garden, and a cluster of red berries with autumn leaves intermingled; even the Ferns, Mosses and twigs of evergreens may be employed for this purpose, and if tastefully arranged cannot fail to be effective. A few sprays of dried Grass, with the scarlet berries of Holly, Black Alder, and others, may be employed for making bouquets. It matters not what the materials are if the best of those at command are selected and arranged with taste. But it must not be forgotten that this "taste" comes with practice and association, and the mother who never attempts or tries her hand at such devices must not expect to become skilled in the act, or see her daughters grow up accomplished housewives. The "last bouquet" may be taken from the garden this month in many a northern locality, but its place should not remain empty for an hour or day; because it is these little things which when put together make up the sum total of life's pleasures.—*Moore's Rural*.

Delicate Drooping Plants for Vases.—On going through the stoves of one of our metropolitan nurseries, the other day, I noticed two kinds of delicately-formed bright green plants, hanging from the Moss of the Orchid-baskets to a length of about 18 inches. Closer inspection proved them to be the wild English plants, *Galium palustre* and *Oxalis corniculata*. Either the roots or the seeds had been overlooked while cleaning the Sphagnum in which the Orchids were planted; and hence this elegant graceful drooping fringe to the square lattice-work baskets. I need hardly say that their relatives, in their native bog, might be excused for not recognising them, since they were considerably attenuated by the unnatural heat to which they were subjected; a gardener might call them "drawn," and a wireworker "fine-drawn." They are, however, so pretty for vases with delicate stems, that I shall certainly try to grow them in a warm greenhouse in pots of Sphagnum standing in saucers, and hung from the roofs.—*W. T. P.*

A New Medicinal Plant.—In a pretty Alpine shrub, well-known in the Chilian Andes, but not, as yet, cultivated in Europe, remarkable medicinal qualities have been recently discovered, in a curiously accidental manner. A small flock of mountain sheep, suffering from a peculiar form of liver disease, was recently driven into a separate enclosure high up in the mountains, to keep them separate from other flocks. There they were left to perish or improve, as it might turn out. To the surprise of the proprietor they all rapidly improved, and were eventually found to be perfectly cured. What could have produced the unexpected change, and caused appetite and strength to return in such a marvellous manner? It certainly could not be the extremely scanty mountain Grass. Being watched, it was found that they left the ordinary herbage untouched to browse upon the leaves and young shoots of a shrub, of which the fence was formed. This shrub was the *Boldoa fragrans*, commonly known as Boldu, the original Indian name. Its foliage is brilliantly green, and the flowers, which are pale yellow, are bright and effective. The flowers, leaves, or bark, when crushed, emit a strong and fragrantly aromatic odour, from which the plant has received its specific name. An essential oil is also expressed from them, which is known as boldine. The experimentalists say that it contains an alkaloid that promotes healthy digestion, and acts directly upon the liver, like calomel, but without any of the bad results which over-doses of calomel induce. The French physicians who have experimented on the action of boldine, and its value as a medicine, may be over sanguine, but they expect the most valuable results from its introduction to the European pharmacopias. *Boldoa fragrans* has opposite, ovate, short-stalked leaves, and the flowers appear in little axillary racemes, the male and female flowers being on different plants. It bears a fruit about the size of our common Hawthorn, which is of pleasant flavour, and often eaten by the mountaineers. The bark is used by tanners, and the wood is preferred to any other for charcoal, possibly on account of the slight aromatic fragrance which it sometimes emits in burning.

VARIETIES OF THE BANANA.

THE *Florida Agriculturist* contains the following remarks upon the treatment of this fruit and the characteristics of its varieties, which may interest growers of tropical fruits. There are several varieties of Banana cultivated in the Island of Jamaica. Of these the Martinique as named there, but called here the Jamaica, is considered the best, as being hardier in growth, easier to cultivate, not easily blown or broken down, and the best for eating. They bear within one year after planting, and the bunches are very large. We have seen some that a man could not lift. The fruit is long, and of a rich yellow colour. They are often brought here from Nassau. Once planted they require no care, but will continue growing, suckering out, and bearing. All other sorts of Bananas have been cast aside since these were introduced into the island. Another long Banana, called the Tiger, from the skin of the fruit being striped with black, is grown in some places, but the fruit is not considered so good as that of the above-named sort. The Otaheite is another of the same class as the long Bananas. The fruit must be very ripe before it is fit to eat. The flesh is of a rich strawberry colour. This is, however, not a profitable kind to grow. Of short Bananas, the Dwarf or Chinese is a kind not growing more than 4 or 5 feet high, with a strong, stout body. It bears large bunches of fruit, which hang nearly to the ground, and stand firm, but the fruit is of no account, and is usually used as a culinary vegetable, like a Plantain. The Redskin is a strong-growing plant, which bears large bunches of handsome fruit; but in Jamaica it is not considered equal to the Martinique. A kind called the Apple is not a profitable Banana to grow. The bunches are medium-sized, and the fruit about the length of a person's finger, and very delicious; but the plants root up easily, and they require more cultivating than other kinds. Finally, the triangular Banana is the worst of all the Bananas. Its bunches are medium-sized; but the fruit is not nice, being slimy. It should be baked before eating. There are other varieties grown; but these are the only kinds that are commonly met with in the West Indies. Every negro hut has Bananas growing around it. They are manured with ashes from the kitchen. As the bunches become fit to use, they are cut off and taken into the house to ripen; for Bananas that ripen on the stalks are not near so nice as those cut, as they contain a strong alkaline juice which exudes from the stalk when cut off. The fruit should be allowed to fill out and be fully grown; the bunches should be then cut off and hung upside down to ripen in the house. The green fruit can be used as a culinary vegetable, by having the skin peeled off before boiling, and mashed up with butter or lard, with pepper sprinkled over it. A favourite way in the West Indies is to boil Bananas with salt beef or pork, and to mash them up with some of the fat skimmed off the water. When ripe, the fruit can be made into pies, similar to Apple pies, by peeling them, placing them in a dish, and pouring in butter and sugar that has been rubbed together over them before baking. Bananas are delicious done in this manner. The Banana will not stand frost, the leaves being so thin that they are susceptible to any extreme; but some of the species may be harder than others. In the West Indies, when the stalk comes up spindling and weak, it is cut off just below the leaves. This does not kill it, but has a beneficial effect in making it thicken out, and become stronger. We think that if this plan were adopted with those that had been affected by frost it might have the same tendency, but it should not be done until cold weather had entirely passed away and the plants show an inclination to grow. As the bunches are cut the stalks should be lopped down to within a foot of the ground, cut into pieces and placed around the roots: the same with the leaves. When plants with young fruit are caught by frost before coming to perfection, we think it is the best plan to cut down the whole stalk at once. This enables plants left standing to receive full nourishment on the return of spring. In the West Indies, if the Banana is highly manured, the stalk or body, as it is called there, will grow very large and succulent, but at the expense of fruit. Ashes have been found to be the best manure that can be given, with an occasional sprinkling of salt.

The Cost of Water-squirting.—On the recommendation of the Parks, Commons, and Open Spaces Committee of the Metropolitan Board of Works, that "the fountain in Leicester Square be closed until the 1st of May next," it was stated at a recent meeting that the water bill for supplying the fountain for three months, when it was playing for six hours a day, was £250, and that to work it for four hours per diem per annum would be £1,000. It was decided to close the fountain until the time recommended. Here is another proof of the advantages of allowing fountain builders their own way in a garden. The fountains in Leicester Square are the most peurile imaginable, yet the cost of the water alone amounts to a sum that would suffice for the support and keeping up of a large and beautiful garden.

THE PUBLIC PROMENADE AND GARDEN OF RIO JANEIRO.

THE magnificent bay of Ganamara, along the shores of which the public Passeio stretches for a considerable distance, has been celebrated for its beauty ever since the first settlement of the Portuguese in the Brazils. At a time when unadorned by Art, or any plantations beyond those sown by lavish Nature, in a delicious climate, that beach was called "the walk of the lovely nights;" and, no doubt, in the exquisite evenings and nights of that beautiful region—the placid sea rippling gently to the beach, and brilliantly lighted by the tropic moon—that the name was an appropriate one. Villeganon, as early as 1555, wrote enthusiastically of the bay of Ganamara, and declared that nothing but the Bosphorus could be com-

as that now occupied by the public gardens, was low, marshy, and unhealthy; causing difficulties which it required all the energy of such a skilful administrator as Vasconcellos to overcome. But, by dint of perseverance and a lavish outlay, the gardens and grand sea-walk, which are now the admiration of all travellers, were successfully created and richly embellished and planted. The plantations inaugurated by the garden-loving Viceroy are now nearly a century old, and are flourishing in all the luxuriance and magnificence of mature growth. The great Mangoes (*Mangifera indica*) form the salient features among the larger trees; and among the shrubs and undergrowths, of many beautiful and exceedingly various kinds, the Rose-Laurel (*Nerium Oleander*), so beautiful and luxuriant in warm climates, is there seen to the greatest advantage.



View in the Public Promenade, Rio Janeiro.

pared to it for beauty. He described also, in verses that sometimes verge on the extravagant in their magniloquence, the beauties of the gardens of Rio; but these are now but archaeological matters, for everything has changed at Rio since the days of the poetical traveller. The introduction of the trees and plants of other climates, which nearly all thrive luxuriantly, has changed the entire aspect of the surrounding country, and enriched the vast plains with various kinds of foliage, which have become as important and as beautiful features in the landscape as the native vegetation of that region, in which wood was somewhat deficient.

It was not until the year 1778, during the government of the fourth Viceroy, Luis de Vasconcellos, that the present public promenade was created. A great part of the ground now occupied by the promenade when thus projected, as well

The region of Entre-Rios has many other noble gardens to boast of. All kinds of European fruit trees flourish vigorously; especially the Peach, though it requires renewing every fifteen or sixteen years. The Pear and the Apricot have also acclimated themselves in an extraordinary manner, notwithstanding that they are so essentially natives of temperate and even cold climates. Among the best known gardens in the neighbourhood of Rio is that of General Urquiza, which may be taken as a model of the best Brazilian gardens; all of which have, however, as it must be confessed, more the aspect of vast nurseries than of gardens, in the European sense of the word. They possess, however, with their long shady alleys, their general aspect of vegetable luxuriance, the soft air that gently stirs the luxuriant foliage, which simply to breathe is a pleasure, a charm peculiarly their own;

and, with perseverance and a little stronger infusion of European art, marvellously beautiful effects will, doubtless, be achieved in and about Rio at no very distant period, of a kind of which the most advanced horticulturists can at present form no definite idea; especially as nearly all the plants of other tropical countries, as well as those of temperate and even cold climates, appear to thrive in that favoured region quite as luxuriantly as does the native vegetation.

H. N. H.

THE HOUSEHOLD.

RECIPES.

To Preserve Pears.—Parboil some Pears with the peel on, take them out of the water, peel and quarter them, then let them lie twenty-four hours in large dishes, with powdered lump sugar thickly sprinkled over them; to 6 lbs. of Pears put the same quantity of loaf sugar, 1 oz. of ginger sliced thin, the peel of three Lemons cut into thin strips, and one pennyworth of cochineal. Stew gently for five hours, and keep in close covered jars.

Apple Jelly.—Soak 1 oz. of gelatine in a pint of cold water for two hours; turn it into a stewpan with half the rind of a Lemon thinly pared and cut into strips, and $\frac{3}{4}$ lb. of loaf sugar. Stir this mixture over the fire until the gelatine and sugar are dissolved, add 1 lb. of good cooking Apples, pared and cut into thin quarters. Let these all simmer until the Apples are quite tender and the syrup clear; but the jelly must not be boiled fast or it will be a failure. Pour it into a mould in which cold water has been standing. Let it remain until the next day, and then turn it out, and place whipped cream, sweetened and flavoured with Lemon juice, round it.

Preserved Seville Oranges.—Take any number, and rather more than their weight in white sugar. Slightly grate them, and score them round and round with a knife, but not very deeply; then put them into cold water for three days, changing the water two or three times a day. Tie them up in a cloth, and boil them till they are soft enough for the head of a pin to penetrate; while they are boiling put the sugar on the fire, with rather more than half-a-pint of water to each pound; let it boil for a minute or two, then strain through muslin. Place the Oranges into the syrup till it jellies and is of a yellow colour. Try the syrup by putting some to cool; it must not be too stiff. The syrup need not cover the Oranges, but they must be turned, so that each part gets thoroughly done.

Quince Marmalade.—Peel the Quinces, quarter them, and remove the cores and pips. The quarters should be thrown into a pan of cold spring water as they are cut, to preserve the colour. The Quinces should then be put into a covered jar with one quart of water to 4 lb. of fruit, and stewed in a slow oven for several hours till they are quite tender, and of a bright red colour. When they are thus prepared for marmalade, weigh them, and to every pound of fruit allow $\frac{3}{4}$ lb. of crushed lump sugar. Put the fruit into a preserving pan, and bring it gently to a boil, stirring frequently all the time. Continue boiling till the whole is quite soft and a smooth pulp; then add the sugar, and again bring the fruit to a boil. Continue boiling gently for twenty or twenty-five minutes. Take the pan from the fire, and paste down the marmalade in jars while hot with double papers, care being taken to have the paste quite boiling, and to strain the papers tightly over the jars.

— Take 4 lbs. of Quinces pared them and quartered, lay in a stone pan with a teacupful of cold water and a little pounded loaf sugar ($\frac{1}{2}$ lb.), cover the jar closely and let it remain on a stove in a cool oven until the fruit becomes red and tender. Have ready a syrup made of 3 $\frac{1}{2}$ lbs. of loaf sugar, boiled with a pint and a half of water for ten minutes. Add to this 1 quart of Quince juice, prepared by stewing 4 or 5 lbs. of Quinces in the same manner as before described, and straining their juice through a coarse cloth. Place in a preserving pan the syrup, fruit juice, and the 4 lbs. of Quinces, let them boil until the marmalade is tolerably stiff, carefully stirring it all the time.

Walnut Ketchup.—Boil or simmer a gallon of the expressed juice of the Walnuts, when they are tender, and skim it well; then put in 2 lb. of anchovies, bones and liquor, the same of Shalots, 1 oz. of Cloves, ditto of Mace, ditto of pepper, and one clove of Garlic. Let all simmer till the Shalots sink; then put the liquor into a pan till cold, bottle, and share the spice with each. Cork closely, and tie a bladder over it. It will keep twenty years, and is not good till after the first. Be very careful to express the juice at home, for it is rarely unadulterated if bought.

— Perhaps there is no better Walnut ketchup than the liquor from pickled Walnuts. Walnuts rob the vinegar of its acid very completely, and then suffer for want of the keeping property which they have consumed, whereas ketchup is the better for not being too acid. Take out the old vinegar and bottle it for ketchup, and put

fresh vinegar to the Walnuts, and two good ends are gained. The next best is: put Walnuts into a stone jar, cover them with very strong vinegar, and let them stand for six months or a year, but look at them now and then, and fill up with vinegar when necessary. Then take out the liquor, and to every quart put a clove of Garlic, two ounces of anchovies, half-a-pint of red wine, a little salt, and mace, cloves, allspice, long pepper, and black pepper, of each a $\frac{1}{4}$ oz. Boil altogether until the ketchup has the full flavour of the spice, let it get cold and bottle it. Another way is to grind the green Walnuts in a mill, or pound them in a mortar, and squeeze out the juice through a coarse cloth. To every gallon of juice put 1 lb. of anchovies, 1 lb. of bay salt, 4 ozs. of allspice, 2 ozs. of long pepper, 2 ozs. of black pepper, mace, cloves, and ginger 1 oz. of each, and a stick of Horseradish. Boil all down until reduced nearly half; let it get cold, bottle it, and in three months it will be fit for use.

A Good Way with Spanish Onions.—Spanish Onions are best stewed in brown gravy; they are also good put whole into a saucepan with about $1\frac{1}{2}$ oz. of butter to each Onion, and allowed to stew for about an hour, or until done. A little pepper and salt should be added. A dessert-spoonful of Mushroom ketchup put in just at the last takes off the richness of the gravy. This is a good and proved way of cooking these.

To Preserve Truffles.—The following recipe for the preservation and use of Truffles, was obtained some years ago from the cook of the Thatched House Tavern. To preserve them: As they are found 8 or 10 inches below the surface of the earth, they require a good deal of washing and brushing before they can be applied to culinary purposes. When washed the water should be warm, and changed frequently. Truffles lose much of their flavour if allowed to get dry. Pick out the blackest, peel them carefully with a sharp knife, reject all which are the least unsound, put them into bottles as close as they can be shaken, cork them tight, and boil them for an hour in the "bain-marie."

Tomato Soup.—Stew twelve Tomatoes with a little butter, pepper, and salt (but no water), until they are tender; rub them through a sieve; add the pulp and juice to two quarts of boiling stock which has been well flavoured with vegetables. Thicken the soup with a little flour or arrowroot. Add two lumps of sugar. The addition of more butter or half-a-pint of cream may be considered an improvement, if a very rich soup is desired.

SEED SAVING AND PACKETING.

SEED, plant, flower, then seed again, is the way with most plants over and over, year after year. What a wonderful thing a seed is; what a mystery is wrapped up in a tiny grain, which will remain quiet for years, until the proper heat and moisture awaken the slumbering plant within it? But now is not the proper time to talk about growing the plant from seed; we must consider the seed as the end of the season's work of the plant. If we left the seeds to take their own course, they would be scattered on the ground near where the plant grew, or they would be conveyed to greater distances, carried by the winds, or thrown by the bursting of the seed-pods. The ways provided for the scattering of the seed, are many and most interesting, but we are not now treating of seed-scattering, but of seed-saving. If we allow seeds to grow just as they please, those of plants from warm countries will be killed by the cold of

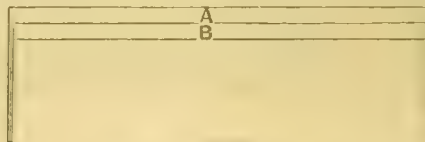


FIG. 1 (Folding the Packet).

winter; while others will come up after lying on the ground until spring; but at the same time the seeds of weeds will come up too, and our flowering plants will be likely, while very young, to be crowded and killed by the more rough and strong young weeds. So in gardening we help Nature, by gathering the seeds and keeping them until next spring, or the proper time, and then sowing them where we can take care of the little plants when they appear, giving them the ground all to themselves, where they will not have to struggle and crowd against other competitors. If we look around among the plants, we shall see that the seeds are contained in little cases or pods of very different forms. Some of these open with a slight report, and scatter the seeds about; these you must gather just as they begin to ripen. Others just break open the pod, and need a little shaking or rubbing to make them fall out; and there are still many other kinds of seed-vessels. So we must exercise a little care in the matter. The best

way is to have some paper-boxes, and put the seed-pods in these for a few days, until they dry; then rub the seeds out, pick out the remains of the pods and stems, and then put the clean seeds on a paper, and carefully blow away any light dust that may remain among them. Mind, that when you gather the seeds, you put their names with them. Write them on a piece of card, or on a bit of stick, to keep with them while they are drying. Never leave seeds of any kind without a name with them; this will avoid much trouble and guessing. Having the seeds all dried and cleaned, they may be put away for winter. Some make little paper-bags, by pasting, very nearly like the grocer's bags, only much smaller, and these are very useful; but a bag without any paste can be made anywhere in a minute. In a garden, and wishing to give



Fig. 2 (Folding the ends).

a friend a few seeds, or in the fields or woods, when a plant is found, the seeds of which one would like to save, only a bit of paper is required to make a bag as good as the best.

How to Make Seed Papers.—Take a piece of paper (letter-paper, or smooth brown paper is as good as any), somewhat longer than wide; fold it over, but not quite equally (see fig. 1). The edge of the part of the paper folded over should come to the line between A and B in the figure. Then fold A over on to B, and both together over to a line a little below B. This is twice as easy as it seems in explaining it. Then turn the paper over, and fold one end as shown at the right hand of fig. 2. Next fold the point b over in the same manner, and tuck the point b under the fold a, and it will appear as seen on the left-hand end of the diagram. Prepare the bags by folding one end beforehand. When ready to put in the seeds, open the bag by blowing at the unfolded end; and, when the seeds are in, that end is closed by folding it just as the first end was folded. This makes a packet, from which the finest seeds will not escape, and which, for all but very large parcels, such as vegetable seeds, is as handy as need be. There is no paste required, no string to tie, and a very neat packet can be made with common paper. But, before putting the packet away, do not forget to label it. Fig. 3 shows how this is done. Like all such things, these packets are much easier to make

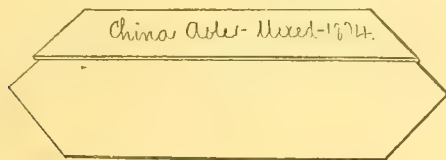


Fig. 3 (The Packet complete).

than to describe; but, by following the directions, I think you will succeed the first time. Seeds should not be put away until dry, and then they should be kept in a cool dry place, where the mice will not find them. I cannot end this seed matter without advising that many more seeds than will be likely to be wanted by the collector himself should be saved, leaving sufficient to give away, as much pleasure may be inclosed in the little packet with the seeds. To care for and give away flower-seeds is one of the ways in which even boys and girls can help to make the world pleasanter and better.—*Agriculturist*.

Otto of Roses.—The *Moniteur Industriel Belge*, in an interesting article on this costly perfume, says that the manufacture is largely carried on in the Valley of Kesanlik, Roumelia, the annual production of the Rose farms amounting to 4,400 pounds of the otto per year. As it requires about 130,000 Roses, weighing some 57 pounds, to make an ounce of the oil, some idea of the extent of the plantations may be formed from the above given total. The flowers are gathered in the middle of May, and the harvest continues for three weeks. The blossoms collected each day are at once worked, in order that none of the odour may be lost. The process consists in distilling them in water and then causing the water alone to undergo distillation, when the oil is skimmed from the surface. The labour is principally done by women and children, at wages of about 10 cents per day. The otto is always adulterated before transmission to market, with one-third or one-fifth its quantity of Geranium oil.

THE ARBORETUM.

THE MOST PROFITABLE VARIETIES OF TREES FOR PLANTING.

By ROBERT HUTCHISON.

THAT the necessity exists for further and more extensive introduction of varieties of trees which, by their quick growth and early maturity will repay their planters by early profits, there can be no doubt. Any one sceptical upon the point has only to look at the immense and rapidly increasing strides with which every manufacturing industry of the country is progressing. The demand for wood of every description, at enhanced prices, and the great scarcity of supply existing in many descriptions, will also corroborate the statement, and especially so when it is added that the demand is greatest, and the scarcity most apparent, in those very classes of trees of rapid development, namely, Willow and Poplar. During recent years the consumption of Willow as timber for the numerous railway networks of systems over the length and breadth of the country, has been enormous. Its universal adoption and peculiar suitability for the blocks of the brakes, &c., of waggons and other railway vehicles, have induced great scarcity of wood of large dimensions; while the more general application of Poplar of good quality for many country purposes, for which, before the introduction of the Larch disease, that tree was used, has caused a great increase in the demand for well-grown Poplar-wood. Indeed, the substitution of Poplar for Larch is, in many parts of Scotland, now very general; for in addition to the risk of failure of the Larch crop by disease, and its being a tree which requires a longer time to produce wood of relative value than Poplar, there are many more useful purposes for which the wood of this latter named tree is found to be better adapted than young Larch wood of from fifteen to twenty years' growth. Consequently, the introduction of Poplar trees in young plantations mixed with Spruce, or Scotch Fir, and Larch, to be used as nurseries, seems too much neglected. The comparatively quicker maturity, for sale purposes, of the Poplar trunk, renders it a very desirable tree to be used for such purposes, and the variety of soils to which it can, without detriment to its rapidity of development, accommodate itself, makes it capable of very general application in most situations where plantations are being formed, or where any of the other common nurse trees are employed. Judiciously mixed in this manner, the Poplars may be thinned out first, along with the Scotch Firs, and thus allow the Larches to remain, if they should prove to be a healthy and thriving crop, till they become of more value from their larger growth; while in the meantime a better return is obtained from the Poplars than would have been produced had Larch alone been used instead of them, and cut when the wood first required to be thinned. The variety of Poplar most suitable for this purpose, and indeed, the best of all the class of fast-growing timber trees, is the Black Italian (*Populus monilifera*). Reference has already been made to the value of this tree in a recent issue of the "Society's Transactions," so that it is almost superfluous again to record its distinctive qualities and merits. Suffice it to say, that the more general cultivation of this useful and desirable Poplar for timber purposes is well worthy the consideration of every Scottish planter. Although this tree, like the other Poplars as a class, will thrive in almost any soil, and attain to considerable size in a very few years, it prefers, and will grow most rapidly, when planted in a deep moist loamy soil, and makes most wonderful annual growths of young wood in damp, although sandy, alluviums beside river banks or level flats. The height to which a full-grown Poplar of this variety will attain is about 120 feet, and this altitude it will reach in sixty years in suitable soil and situation. The uses to which its timber are adapted are numerous, and owing to this toughness and lightness it is well suited for any constructive purpose. In localities whence there is easy and convenient means of transit to any of the great centres of industry and manufacture Poplar wood of fair size, from about 2½ to 3½ feet diameter at the base of the trunk, will fetch from 1s. 3d. to 1s. 4d. per cubic foot, and frequently a higher price. In this respect, grown solely as a crop, this species of Poplar, in the same given number of years, will be found to be a safer and more remunerative tree to plant than almost any other. Other varieties of Poplars are also worthy of notice as being "early remunerative trees," and should be much more extensively cultivated. We refer to the common grey Poplar (*Populus canescens*), the white Poplar (*Populus alba*), both of which are decidedly worthy of much more attention than arborists have hitherto given them, and will be found to be trees of very useful value as timber for country purposes. The grey Poplar is indeed a very potent rival to the black Italian, but we prefer the latter as yielding a timber of much higher quality for every purpose than the former named tree will yield at the same age. This last mentioned tree, the grey Poplar (*Populus canescens*), is also much esteemed by many planters, and is deservedly prized for its striking foliage and cold grey tints, when skilfully blended with warmer hues in the landscape, no less than for its intrinsic merit as a useful "country wood" producing tree. It yields a light, tenacious, durable quality of timber, and is an equally rapid grower with the black Italian Poplar. The other varieties of Poplar, such as the Athenian (*P. græca*), the black Poplar (*P. nigra*), the white Poplar (*P. alba*), and the Ontario (*P. canadensis*), may be all held as fast-growing trees respectively and worthy of attention to some extent where variety of foliage and habit in a mixed plantation are desired; but as rapid producers of wood of any considerable value, we must limit our recommendations to the two Poplars previously named, *P. monilifera* and *P. canescens*. In planting Poplars it is very necessary to give due attention, in the young plantations or strips, to "clear head-room" to the young trees, for the Poplar is of itself not very prone to throw up a vigorous leader, while the rubbing and fraying of neighbouring

shoots too frequently destroys the tender soft bark of the young wood of the main stem, where early thinning has not been attended to in due season. Poplar trees in strips and plantations may thus be frequently seen to be permanently injured from this cause, and if really good specimens are desired in after years, it would be well to clear out all round the specimens left. The return from the sale of the wood of the grey Poplar of similar age to the black Italian, is about the same under ordinary circumstances, and we find that, at some timber sales lately, vigorously grown trees of the grey Poplar fetched as much as 1s. 2d. and 1s. 3d. per cubic foot, being about 2 feet in diameter at the base; and in other localities, similar, if not better, quotations were realised at recent sales for similar sizes and equal quality.

Having thus cursorily noticed the principal members of the Poplar family which are deserving of wider introduction into the woodland scenery and economic planting of this country, we shall proceed to notice those varieties of the Willow family which are worthy of more attention than they at present receive, as being trees of rapid growth, producing good and useful timber, and as being decidedly entitled to be fairly ranked amongst the foremost species of forest timber trees, as subjects worth planting, as early remunerative trees. The rapid growth of the Willow is a matter of universal admission. From the earliest Scripture times we are told of this habit of quick development when in suitable localities and situations. Thus, "they shall spring up as Willows by the water courses;" and the very derivative name "*Salix*," under which the whole class is enumerated, signifies to spring, and is thus characteristic of the habit so well-known of the plant. The varieties of the Willow family are well-nigh countless. Loudon enumerates some 282 varieties as well-known and in cultivation. The general features of the broad outlines of the family are their rapidity of growth. The soft, porous, light, and inflammable nature of the timber, and its general suitability for country purposes, to which ordinary hardwood and Fir are quite inapplicable, but in regard to which its toughness renders Willow or Saugh peculiarly adapted, and combine to make this tree worthy of more extensive cultivation. The covering or "cleading" of cart bottoms and railway waggons, and the manufacture of brake-blocks, form a considerable source of demand for the timber of large well-grown Willow trees, and there are many other purposes to which this wood is specially adapted, and for which it is largely used. Passing over for the present the treatment of the Willow as a crop (grown as wands), and the remunerative advantages of this mode of utilising wet lands and damp situations, where from peculiarity of situation drainage is difficult, we notice only the question of the value of the Willow as a timber-producing tree. Unfortunately, in this country the Willow is too often thrust into the background as a tree worth planting for the value of the wood, and is planted only or chiefly in damp marshy corners, where it is frequently neglected, and allowed to grow up without any regard to the formation of a good bole, or, in fact, without any reference whatever to its ulterior use. Were some little care and attention paid to this handsome species of trees, even in such waste situations, the trouble and expense would amply repay the planter. Indeed, there is no department of forestry that yields a better return than cultivating these rapid-growing timber trees, such as the Willow and Poplar. In the commercial world small profits and quick returns are now-a-days the acknowledged maxim of correct mercantile policy; and similarly in forestry, whatever plan of management, planting, or beating up be adopted, and shows the most probable prospect of future advantage, at the earliest date, is sure to be at once recommended and put into practice.

It is very difficult indeed, out of 282 varieties of the *Salix* or Willow family, to single out one or two of the most suitable and advantageous for general planting as timber trees; but at the same time, though there may appear 282 varieties, botanically speaking, these may be reduced to a very much smaller compass when they are treated of collectively as timber trees. In fact, they present frequently so few features of distinctive merit or difference, that the number might be very safely reduced to a much smaller list of distinctive individual trees, worth growing for their timber in suitable soils and situations throughout Scotland. Indeed, after a careful analysis of all the species, it appears that the entire list of Willows, which may be regarded as claimants for popular favour as timber trees, may be simply reduced to four distinct varieties, viz., *Salix alba* (the white or Huntingdon Willow), *Salix caprea* (Goat Willow or Saugh tree), *Salix russelliana* (Bedford Willow), and *Salix fragilis* (red wood Willow). Of these varieties, the first-named, viz., the Huntingdon Willow (*Salix alba*), is probably, when unpruned and grown naturally in favourable circumstances, the handsomest and finest of all the Willows of really tree dimensions. It is, in truth, a most picturesque and beautiful tree, whether it be regarded for its general outline and habit, or for the peculiar and distinctive whitish appearance of the foliage, which, combined with its general light and elegant outline, contribute to render this one of the most favourite trees for planting in such situations as conduce to its early and full development. Such situations are river banks in deep, damp alluvial soils in flat marshy ground, and upon those low-lying swampy situations so well known and common in Scotland, where few planters care to risk a general crop of timber trees. This Willow which we deem worthy of far more universal cultivation in this country than has hitherto been attempted, has, like many other varieties of its tribe, the advantage of thriving very well indeed in rather poor soils, and in thin sandy stretches or on damp sub-soils. Certainly most trees will thrive better in deep rich loamy soils, with rather a damp sub-soil, than in a poor thin one; but the only point of importance to be observed now-a-days is, that the soil (whatever its nature may be) shall be well drained from stagnant water, and trees of magnitude, such as the white Willow, grey Poplar, and other rapidly growing timber trees, will all benefit imme-

diately. Thus in cold upland situations not only may the grey Willow, but also the Bedford Willow (*Salix russelliana*) be grown with profit and advantage. In any situation of soil, with damp bottom, the progress made by the grey Willow is truly marvellous. The plants so situated soon attain considerable height, and rush up with clean straight boles when planted closely, and yield timber of no small value in a very few years. It has been observed that the annual increase in timber of the grey Poplar, in trees of about twenty years of age, is at the rate of about two cubic feet in certain situations—certainly no inconsiderable rent for the ground occupied by the tree—and this measurement has been verified in more than one place both in Scotland and England; and, in some soils, trees planted eighteen years ago have now attained, in strong clayey loam, fully 52 feet in altitude, and girth about 7 feet in circumference at 1 foot from the ground. The wood of the *Salix alba* is used for a variety of wright-work. It is peculiarly light, tough, and easily wrought, and is adapted for a great number of country purposes.—such as cleading of carts and waggons, railway brakes, planking and joisting boards, and for many purposes in connection with mill-wright work; tool handles, hoops, copper-work, and basket-making. Indeed, there is no part of this tree, from its thick and heavy trunk to the youngest twig, but is adapted to some use. The bark of the grey Willow abounds in tannin, but does not appear to be sufficiently appreciated, and is worthy of more notice in this country for the purposes of the tanner. In this respect it appears to be much more generally used on the Continent of Europe. The facility with which this tree is propagated, and rushes up into shape after being planted, is another recommendation to its future increased introduction. All that is requisite to commence a Willowry or plantation of this tree is to insert into the soil cuttings made from one or two years' wood (about 2 feet long) to the depth, say, of 10 inches to 1 foot. Stobs made of this tree of greater thickness, say even up to 4 to 6 inches in diameter, succeed very well in damp sub-soils, and many fine large trees have been grown from them, although, upon the whole, and in a variety of soils and situations, trees grown from the smaller sizes are preferable.

The next variety of Willow, well worthy of culture in this country, is the large-leaved or Goat Willow (*Salix caprea*), commonly called "the Saugh." Although it can hardly be said to acquire a great height and large dimensions, there are, nevertheless, examples throughout the country of immense size, considering the habits of the tree. It thrives in any soil or elevation, but will attain its highest height and dimensions in a dry, rich, deep, loamy soil, with a cool, if not dampish bottom. The wood of the Saugh is tough and elastic, having considerable lateral as well as longitudinal adhesion, and admits of a very fine polish. It is of considerable value for jobbing purposes; but the White Willow (*Salix alba*), in point of utility as a timber tree, beats this variety completely. The price which the *Salix caprea* will realise in a sale is about the same (according to district) as that of the Larch or Birch wood. It is very profitable as an undergrowth in many plantations, for in favourable seasons it will yield young shoots fully 5 feet in one year; and very suitable for the purposes of the crate-maker or basket manufacturer. The bark yields a large amount of tannin. Another member of the Willow family worthy of notice is the *Salix fragilis*, or Red-wood Willow—a tree regarding whose utility there is considerable difference of opinion. On the one hand, its timber has been condemned by some arborists as useless; and they have further asserted that the qualities usually ascribed to it are due to another species, with which they say it is confounded, viz., *Salix russelliana*; while, upon the other hand, its suitability, on account of durability, lightness, and toughness for many purposes, whether local or for ship building, for which it is well adapted, renders it worthy of more notice than it at present attracts in our plantations, where damp soil, with deep alluvial sub-soil, foster its rapid growth. Its wood is likewise available and very suitable for constructive purposes, for houses, water-wheels, planking, &c., and indeed for all country work, where a really good, clean, light, tough, elastic, and useful wood is required. One considerable drawback to this Willow is its liability to become dead in the top shoots, or "stag-headed;" and as this habit is of frequent occurrence, this variety is in much less repute than the *Salix russelliana* or *Salix alba*, as a timber tree of rapid growth. It will thrive best upon a stiff, damp, clayey, soil, with cold sub-soil. The wood is, when cut, red in the heart, with a white margin, and upon being exposed to the influence of the air for a time, the whole assumes a reddish pink hue of agreeable appearance, and of a consistency easily wrought, and of a very useful texture for any domestic or rural purpose.

The other species of Willow which has been mentioned as worthy of extended cultivation in this country is the Russell or Bedford Willow. Resembling as it does the *Salix fragilis*, already described, it is rather more graceful and elegant in its foliage and contour; and indeed, in the case of large and well-grown trees, the *Salix russelliana* exhibits a far finer outline than any other of the congeners of this family. Its rapidity of growth is fully equal to that of the *Salix alba*, and far superior to that of the other members of the Willow tribe already described. Its timber is about equal to that of the *Salix alba*. While light, tough, elastic, and unlikely to crack or split, its timber is highly prized in the building of manufactories, and for flooring and such like purposes; for its non-combustive properties, coupled with its non-liability to shrink or crack, render it very useful in the building of many edifices,—such as mills, manufactories, granaries, &c. It is also, like its other neighbours of the Willow and Saugh tribes, greatly used for cleading cart and waggon bottoms, making railway brakes, lining coal-pits and stone or lime quarries, and for almost any purpose connected with rural economy. This Willow succeeds best in a deep moist soil of medium description, but is decidedly unsuited to situations where water is stagnant in the sub-soil. It will also thrive and produce good timber upon cold clayey soil, if there

be due regard to drainage of the till beneath. Upon the whole, the *Salix Russelliana* is very decidedly a tree to be extensively planted in conjunction with the *Salix alba* and *Salix fragilis*, upon exposed uplands for timber purposes, and in such situations it will yield a quick and good return to the planter. It should be grown in masses, for in such circumstances it is far more profitable than when planted as a single specimen or hedge-row tree, or when mixed with others whose too rapid side-spreading growth may interfere with its head or stem.—*Highland Society's Transactions*.

GARDEN STRUCTURES.

TROPICAL FRUIT HOUSES.

MANY of the well-known fruit-trees of the tropics might be made, under proper treatment, as indicated in our illustration, to yield freely their delicious fruit in this country. Last year a Papaw tree (*Carica Papaya*), about 6 feet in height, produced several of its fine fruits in great perfection in one of the houses in the Jardin des Plantes at Paris. They were of the size of a Cantaloupe Melon, and of a somewhat similar form. They ripened perfectly in a temperature varying from 59° to 68° Fahrenheit. In the beginning of the present month might have been seen, in the same establishment, a gigantic specimen of *Monstera deliciosa*, which ripened its succulent fruit in considerable abundance. This fruit, which may be said to resemble an elongated Pine-apple, exhales an exquisite perfume, and its flavour is not unlike that of a Pine-apple. Few of us will have forgotten that the Mangosteen fruited at Syon a few years since, notwithstanding the difficulties that appeared to beset its successful culture. It was also at Syon House that the Cocoa-nut Palm (*Cocos nucifera*) was, for the first time in Europe, in 1863, made to produce fruit. Bananas, too (see p. 410), as is well known, especially *Musa Cavendishii* and *M. paradisiaca*, if planted out under glass in a suitable temperature, are well known to yield fruit abundantly. The Vanilla lends itself so freely to artificial culture, when care is taken to fructify its exceedingly ephemeral flowers at an early hour in the morning, that its culture, we doubt not, might be turned to good commercial account, as its slender pods, often 10 or 12 inches in length, bear a high price for flavouring confectionery, and for various culinary purposes. The Brazilian Chestnut tree (*Bertholletia excelsa*), the fruit of which is so well known under the name of Brazil Nuts, submits readily to judicious artificial culture, as does also the Date Palm (*Phoenix dactylifera*), the delicious and highly-saccharine fruits of which may be thus artificially produced in great perfection. The Coffee tree of Bengal and Ceylon, forming a very neat and pretty shrub, may be made to fruit freely in our hot-houses, even in a very young state. The Guava (*Psidium Cattleianum*), too, may be cultivated with success. There are several species or varieties of this genus, all of which are of convenient size for growing under glass, scarcely any of them exceeding 15 or 20 feet in height when fully grown. The last plant we shall name, but



Section of a Tropical Fruit-house.

without by any means exhausting a list which might be very much extended, the Clove tree (*Caryophyllus aromaticus*), which yields the Cloves of commerce, ought, on no account, to be overlooked. This handsome evergreen tree is worthy of growth even for ornament, and, though a native of the tropics, will thrive in the open air in some parts of Europe, even of England, but it is only seen in its full beauty as a handsome evergreen tree from 20 to 30 feet high, when cultivated under glass. As evidence that a great number of other fruit-bearing tropical trees may be so successfully treated in Europe as to compel them to produce their curious and, in many instances, extremely delicious fruits, the following list of mere names may be appended:—*Anona Cherimolia*, a Peruvian tree, producing a fruit which the creoles of the West Indies consider to be the most delicious in the world; the Bread-fruit tree (*Artocarpus incisa*); the Carob tree (*Ceratonia Siliqua*); the Calabash tree (*Crescentia Cujete*), the gourds of which, wherever it grows wild, take the place of pottery ware among the natives; the Madagascar "Plum" (*Flacourtia Ramontchi*); the Genipa tree (*Genipa americana*), producing a fruit of the size of an Orange, of such agreeable flavour, that in Surinam the fruit is called the Marmalade box; the Locust tree (*Hymenaea Courbaril*), a tree of enormous

growth, and attaining a great age, some specimens in the forests of Brazil being, it is computed, antecedent in date to the Christian era. While young, this tree would be perfectly manageable under glass. Then there is the Malay Apple (*Jambosamallacensis*), an Indian tree, the fruit of which is much esteemed. The Monkey-pot tree (*Lecythis ollaria*), is so named from the urn-like shape of the fruit or husk, which has a lid that falls off when the seeds,

or rather nuts, are ripe, and allows them to fall to the ground. The nuts of *L. zabucajo* are said to be very superior to those of *L. ollaria*, both in texture and flavour, and also to the common Brazil Nut. The Alligator Pear tree (*Persea gratissima*), the Tallow tree of China (*Stillingia sebifera*)—these, with the Tamarind tree (*Tamarindus indica*), and many others of curious and interesting character, are sufficient to show what an interesting and beautiful collection of tropical fruit trees might be grown without much difficulty; and it is evident that a hothouse, devoted entirely to fruit-bearing tropical trees, would be much more instructively interesting than one in which a miscellaneous collection was placed, without any special intention. In the annexed cut Pine-apples are shown on the side-shelves, the pipes beneath which convey a large supply of genial heat; but there are, doubtless, other pipes at some depth beneath the centre bed calculated to convey a gentle heat to the soil itself in which the fruit trees are growing.

H. N. H.

Wooden Curvilinear Conservatories.—The description given (see p. 369), of a conservatory erected in Mr. Ley's nursery, Croydon, is calculated to lead people to believe that the curvilinear form of roof in wood, and also the substitution of straight for curved glass, are novelties. At the Royal Horticultural Society's

meeting, at Birmingham, in 1872, a curvilinear conservatory, with wooden spandrels on trusses, without tie rods, was shown by a well-known firm; but, before it had been erected many hours, the trusses, though deep and heavy, showed signs of caving-in, and it was eventually found necessary to support each truss by means of an iron column under the centre. We can conceive nothing more out of place than the use of light carved wooden trusses for the main supports of roofs. To be what is called rigid, which is a stern necessity, a timber roof truss must be heavy and well-braced together. We are no advocates for iron in the construction of horticultural buildings; but where rigidity, great strength, and, at the same time, elegance, are required, it is absolutely necessary to adopt it; and, for roof principals, or trusses, there is no stronger or better form of construction than the iron tubular system. As a proof of the confidence placed in this system, we may mention that we have been entrusted with the construction of the Eastbourne Pavilion, the Bournemouth Winter Garden, and other great works on that principle. The use of straight instead of curved glass was exhibited in our prize house at Birmingham, in 1872.—FLETCHER, LOWNDES, & Co., Great George Street, Westminster.

MATERIALS FOR GLASSHOUSES.

WHAT are the materials to employ in the construction of these has become an important question, and one that is continually forcing itself in anything but an agreeable way upon us, viz., in the shape of decayed sash bars, rafters, and wall plates, that much sooner go rotten than they were expected to do. Cheap glass has been the means of increasing the area of fruit and plant structures a hundredfold; and great improvements have been made in the forms of different erections for horticultural purposes. Light, the sheet anchor of good cultivation, both as regards flowering and fruit-bearing plants, so deficient in old houses, has been secured in these modern buildings; very great saving, too, has been effected in labour through facilities in the way of ventilation; in fact, everything possible has been done but rendering them more durable. Unfortunately, this would appear to be a matter lost sight of, comparatively speaking, for, undoubtedly, houses for gardening purposes built of late years will not last anything near the time the old ones did. Nay, further, many an old plant-house or Vinery built a quarter of a century ago will yet outlast similar structures that are not many weeks old. And this is not a matter to create surprise, if we only possess a knowledge of, and take the trouble to examine, the materials of which they are made. Rarely do we now meet with a glass structure of any description in which the timber used is other than yellow pine; and, if we consult a dozen or any other number of builders, they will, one and all, tell us it is the best. But surely the evidence of dear-bought experience is not to go for nothing in the balance with mere assertion. Yellow pine may be the best and most durable in buildings not under the exceptional influence of damp, such as an ordinary dwelling house; but I say distinctly it is not the material to use in the construction of either cool or hot plant and fruit houses, and that it will not last half the time that good red deal will; and the redder the latter is, i.e., the more resin it contains, the longer it will resist the inroads of moisture, which is the great source of decay in buildings of this description. These conclusions I have arrived at through a lengthened personal experience with old and new houses, used for garden purposes of all descriptions, confirmed by observations which I have been enabled to make in places innumerable, where I have ascertained all the particulars necessary as to the age of the different houses, the purposes they have been used for, and data in every way bearing upon the subject. I had a couple of houses of yellow pine put up adjoining one of red deal that had been erected fifteen years, and used from the first as a moist plant stove; the new houses, after eighteen years' similar wear in growing plants that required moisture, were so rotten, that, after strengthening and propping up in all ways, they had to be re-built through sheer inability to make them hold together. The rafters, sash-bars, and every part were so decayed that the blade of an ordinary pruning knife could be easily pushed into the wood in all directions. The old house is standing yet, having all the time been used as a moist house, and to all appearance will last another twenty years. This is one of a number of instances in which I have had an opportunity of seeing the unsuitable nature of anything in the shape of yellow or white deal for hothouse building. If the erection is simply a place in which to grow plants that only require protection from frost, as an ordinary greenhouse or a late Vinery, then inferior sorts of deal may do, and last for a length of time; but for the cultivation of stove plants that need continuous moisture, more or less, in the atmosphere, such wood is totally unsuitable, and should never be used; neither should it be selected for Pine stoves, early Vineries, Cucumber or Melon pits—all of which, requiring moisture, hasten its decay. And I maintain that in the construction of ordinary plant and fruit houses

the principle we go upon is not sound, unless, so far as the glass and wood-work go, they are such as to be adapted for any purpose hereafter required—for plants or fruits that want either a dry or moist atmosphere. Look, for instance, at the numbers of cool plant houses that are turned to the growth of stove plants, as also late Vineries into early forcing work, where the moisture used is much in excess of the original quantity; and even for houses where the subjects grown continuously are such as require no more moisture in the atmosphere than ordinary greenhouse plants, good red deal will last much the longest. I saw this autumn a whole range of houses that had never been used for the cultivation of anything except greenhouse plants, which were being re-built, having become so rotten that they would not stand, after thirty years from the time of their construction; whereas, if red deal had been used, they would have lasted much longer. The old system of hothouse building has, within the last forty years, been completely revolutionised. The massive, heavy timber that formerly was employed has given place to such as is not more than half the weight, so as to admit a maximum of light to the plants grown. This was a vast improvement, consequent upon the better understood requirements of the different plants, and a disposition to produce them in something approaching their natural condition, as opposed to the weakened things that in times past merely existed. But this great reduction in the bulk of the timber employed has naturally reduced the strength, and left correspondingly less to resist the unavoidable inroads of decay; consequently, instead of using a worse description of timber than formerly, we should have at all events kept up to the standard of times past, and this is just what we have not done, and are not at the present time doing. I can see on all sides plant and fruit houses being erected that twenty years hence will be virtually tumbling about the ears of whoever may then have to deal with them; and these, be it observed, are not what are understood as cheap or low-priced erections, but such as cost money enough to command better materials. The natural requirements of great quantities of the plants at the present day cultivated under glass, and the treatment we now give to many long ago introduced to the country, by the use of much more moisture in the atmosphere in their cultivation than formerly, hastens the decay of the wood even when it is of the best possible description, and renders the use of such as is inferior a very serious mistake. The use of iron in the construction of ordinary plant and fruit-houses has met with little favour—why, it would be difficult to say; only in this, as in most other things, when once we get into a certain groove it is a most difficult matter for us to get out of it. It is sometimes urged that the inside drip from iron—more or less unavoidable where the plants grown are such as require a moist atmosphere—is injurious to them. It often happens that the knowledge of a house being built of iron, and so far not liable to decay through the action of moisture, causes its long neglect in painting, to an extent that would never be allowed, if constructed of wood; and the consequent rust discolours the water which is condensed on the roof, and may, in places where it drips upon the foliage, discolour it. But there is no reason why such omission in painting should occur, and the same objection might be raised against the employment of iron for numbers of purposes where, for various reasons, its use is indispensable. Providing that it be kept properly painted, no injury, either real or imaginary, will arise. I can point to iron houses that have been in existence over eighty years, used for early forcing and the cultivation of both stove and greenhouse plants, without the slightest injury having occurred; and, so far as wear goes, they may last another eighty years. Another objection raised against iron sash bars is, that their expansion in hot weather has a tendency to crack the glass. This will not occur if the glass is not put in too tight. Even in the case of wood, breakage will happen if too tight glazing is practised. The importance of this subject will be apparent to all who are about to build houses, especially such as are intended to be used for the growth of plants and fruits that require the presence of a large amount of moisture in the atmosphere. The recent reduction in the price of iron is a consideration in favour of iron houses, and will, no doubt, influence its use for horticultural purposes. T. BAINES.

The Snow Plant.—Can Mr. Andrew Murray or any of your readers tell me what plant is mentioned in the following note from a Denver paper?—"No grander object is met in the mountains about that place than the Snow plant. It is an inhabitant only of the higher rocks, being rarely found below an altitude of 4,000 feet, and its glorious crimson spike of flowers may be seen, early in May, forcing itself through the snows which at that period cling about the sides of our Pine forests. The portion of the plant which is visible above the soil is a bright rosy-crimson in colour, and presents the very strongest contrast to the dark green of the Pines, and the

'shimmer of the snow.' Its root is succulent, thick, and free from moisture, attaching itself to the roots of other plants, principally to species of the Pine family. Hence, it is among those members of the vegetable world which are known to botanists as parasites, and may, therefore, be said to be incapable of cultivation."—Q.

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PHARMACOGRAPHIA.*

THIS is in every way an excellent and remarkable book on the medicinal products of the vegetable kingdom. The capacity of the authors to deal with this subject, and their thoroughly conscientious way of expressing in this work the great knowledge they possess of it, leaves us nothing to do but explain the plan of the work and give an illustration of how each subject has been treated. It was the desire of the authors not only to write upon the general subject, and to utilise the thoughts of others, but that the book which they had decided to produce together, should contain observations that no one else had written down. It is, in fact, a record of personal researches on the principal drugs derived from the vegetable kingdom, together with such results of an important character as have been obtained by the numerous workers on *Materia Medica* in Europe and America. Unlike most of their predecessors in Great Britain during this century, the authors have not included in their programme either Pharmacy or Therapeutics; nor have they attempted to give their work that diversity of scope which would render it independent of collateral publications on botany and chemistry. While thus restricting the field of their inquiry, the authors have endeavoured to discuss with fuller detail many points of interest which are embraced in the special studies of the pharmacist; and at the same time have occasionally indicated the direction in which further investigations are desirable. A few remarks on the heads under which each particular article is treated, will explain more precisely their design. The drugs included in the present work are chiefly those which are commonly kept in store by pharmacists, or are known in the drug and spice market of London. The work likewise contains a comparatively small number which belong to the pharmacopœia of India: the appearance of this volume seemed to present a favourable opportunity for giving some more copious notice of the latter than has hitherto been attempted. Supplementary to these two groups must be placed a very few substances which possess little more than historical interest, and have been introduced rather in obedience to custom and for the sake of completeness than on account of their intrinsic value. Each drug is headed by the Latin name, followed by such few synonyms as may suffice for perfect identification, together, in most cases with the English, French, and German designation. In the next section, the botanical origin of the substance is discussed, and the area of its growth or locality of its production is stated. Except in a few instances, no attempt has been made to furnish botanical descriptions of the plants to which reference is made. Such information may readily be obtained from original and special sources, where, moreover, figures of the plants may not unfrequently be found. Under the head of history, the authors have endeavoured to trace the introduction of each substance into medicine, and to bring forward other points in connection therewith, which have not hitherto been much noticed in any recent work. This has involved researches which have been carried on for several years, and which has necessitated the consultation of many works of general literature. The exact titles of these works have been scrupulously preserved, in order to enable the reader to verify the statements made, and to prosecute further historical inquiries. The following account of the now popular Podophyllin drug, the product of a plant long known to many of our readers, shows the way the authors have done their work:—

Rhizoma Podophylli.

Radic podophylli; Podophyllum Root.

Botanical Origin.—Podophyllum peltatum, L., a perennial herb growing in moist shady situations throughout the eastern side of the North American Continent from Hudson's Bay to New Orleans and Florida. The stem about a foot high, bears a large, solitary, white flower, rising from between two leaves of the size of the hand, composed of five to seven wedge-shaped divisions, somewhat lobed and toothed at the apex. The yellowish pulpy fruit, of the size of a pigeon's egg, is slightly acid and is sometimes eaten under the name of May Apple. The leaves partake of the active properties of the root.

History.—The virtues of the Rhizome as an anthelmintic and emetic have been long known to the Indians of North America. The

plant was figured in 1731 by Catesby, who remarks that its root is an excellent emetic. Its cathartic properties were noticed by Barton in 1798, and have been commented upon by many subsequent writers. In 1820, Podophyllum was introduced into the United States Pharmacopœia, and in 1864 into the British Pharmacopœia, Hodgson published in 1832 in the *Journal of the Philadelphia College of Pharmacy* the first chemical observations on the Rhizome, which now furnishes one of the most popular purgatives, the so-called Podophyllin manufactured on a large scale at Cincinnati and in other places in America, as well as in England.

Description.—The drug consists of the rhizome and rootlets. The former creeps to a length of several feet, but as imported is mostly in somewhat flattened pieces of 1 to 8 inches in length, and 2 to 4 lines in longest diameter; it is marked by knotty joints showing a depressed scar at intervals of a few inches which marks the place of a fallen stem. Each joint is, in fact, the growth of one year, the terminal bud being enclosed in papery brownish sheaths. Sometimes the knots produce one, two, or even three lateral buds, and the rhizome is bi- or tri-furcate. The reddish-brown or grey surface is obscurely marked at intervals by oblique wrinkles, indicating the former attachment of rudimentary leaves. The rootlets are about half a line thick, and arise from below the knots and adjacent parts of the rhizome, the internodal space being bare. They are brittle, easily detached, and commonly of a paler colour. The rhizome is mostly smooth, but some of the branched pieces are deeply furrowed. Both root-stock and rootlets have a short, smooth, mealy fracture; the transverse section is white, exhibiting only an extremely small corky layer and a thin simple circle of about twenty to forty yellow, vascular bundles enclosing a central pith, which, in the larger pieces, is often 2 lines in diameter. The drug has a heavy narcotic, disagreeable odour, and a bitter, acrid, nauseous taste.

Microscopic Structure.—The vascular bundles are composed of spiral and scalariform vessels intermixed with cambial tissue. From each bundle a narrow-tissued, wedge, or crescent-shaped liber-bundle projects a little into the cortical layer. This, as well as the pith, exhibits large thin-walled cells. The rootlets are, as usual, of a different structure, their central part consisting of one group of vascular bundles more or less scattered. The parenchymatous cells of the drug are loaded with starch granules; some also contain stellate tufts of oxalate of calcium. Tannic matter is present in very small amount as proved by perchloride of iron.

Chemical Composition.—The active principles of Podophyllum exist in the resin, which, according to Squibb, is best prepared by the process termed re-percolation. The powdered drug is exhausted by alcohol, which is made to percolate through successive portions. The strong tincture thus obtained is slowly poured into a large quantity of water acidulated with hydrochloric acid (one measure of acid to seventy of water), and the precipitated resin dried at a temperature not exceeding 32° C. The acid is used to facilitate the subsidence of the pulverulent resin which, according to Maisch, settles down but very slowly if precipitated by cold water simply, and if thrown down by hot water fuses into a dark brown cake, which, however, has the advantage of being nearly free from berberine. Resin of Podophyllum thus prepared is a light, brownish-yellow powder with a tinge of green, devoid of crystalline appearance, becoming darker if exposed to a heat above 32° C., and having an acrid, bitter taste. The drug yields 3½ to 5 per cent. of this resin, which is very incorrectly called Podophyllin. The product is the same whether the rhizome or the rootlets are exclusively employed. It is soluble in caustic, less freely in carbonated alkalis, and is precipitated, apparently without alteration, on addition of an acid. Ether separates it into two nearly equal portions, the one soluble in the menstruum, the other not, but both energetically purgative. From the statements of Credner, it appears that if caustic lye is shaken with the ethereal solution, about half the resin combines with the potash, while the other half remains dissolved in the ether. If an acid is added to the potassic solution, a red-brown precipitate is produced which is no longer soluble in ether nor possessed of purgative power. According to Credner, the body of greatest purgative activity was precipitated by ether from an alcoholic solution of crude Podophyllin. It was, however, found, after due purification, to be soluble in ether. F. F. Mayer, of New York, found Podophyllum to contain, beside the resin already mentioned, a large proportion of berberine, and a colourless alkaloid, a peculiar (?) acid, an odoriferous principle which may be obtained by sublimation in colourless scales, and, finally Saponin. From all these bodies the resin, as prepared for pharmaceutical use by Squibb's process, is free, provided that, after precipitation, it is well washed with hot water to remove the berberine. An aqueous extract of Podophyllum is devoid of cathartic power.

Uses.—Podophyllum is only employed for the preparation of the resin (Resina Podophylli) which is now much prescribed as a purgative.

* "Pharmacographia: A History of the Principal Drugs of Vegetable Origin, met with in Great Britain and British India." By Friedrich A. Flückiger (Phil. Dr., Professor in the University of Strassburg) and Daniel Hanbury (F.R.S., Fellow of the Linnean and Chemical Societies of London). London: Macmillan & Co. 1874.

THE KITCHEN GARDEN.

IRRIGATION OF VEGETABLE GARDENS.

THE neighbourhood of Sens supplies to Paris a large share of the culinary vegetables required by the yearly increasing population of that metropolis. One of the principal advantages enjoyed by the market-gardeners of Sens is the abundant supply of water furnished by the always brimming River Vannes. From this source, irrigation, at suitable periods of the year, can be easily obtained to any extent required, and this facility renders the neighbourhood of Sens quite a lesser Egypt in point of fertility. The well-known fertilising power of the annual inundation of the Nile might long ago have taught other gardeners than those of Sens what extraordinary advantages may be derived from the natural or artificial overflowing of rivers, especially in flood time, when the water brings down fertilising matter of various kinds, which, deposited evenly over the fields and gardens so irrigated, is more beneficially stimulative than the less regular application of strong artificial manures; or even guano, which cannot be applied with the same moderation and regularity as the gradual water-spread stimulants furnished by irrigation. There are market gardens by the acre close upon the banks of the Thames and other of our tidal rivers, but one does not hear of the periodical high tides being utilised, while they are, at the same time, kept under due control by fitting means. It appears that the gardening craft of Sens is about to be partially deprived of the great advantages it has so long derived from the copious flow of the Vannes; inasmuch, as it has been determined to make use of that source for supplying Paris with a purer supply of water than it has hitherto enjoyed. The works are already far advanced, and, as a natural consequence, the level of the waters of the Vanne have already fallen to a point which imposes heavy labour on the gardeners of Sens, who form a very numerous class in that locality. It will be interesting to watch their proceedings, and the methods by which they will be enabled to surmount their present difficulty, which, with characteristic French ingenuity, they will, doubtless, accomplish. The lesson may possibly be turned to good account in this country.

H.

SHELTER FOR KITCHEN GARDEN CROPS.

SCARCELY a year passes without teaching us lessons upon the importance of shelter for growing crops. There are so many things in a garden that are tender, or only half-hardy, that gardeners, more than any other class, realise the terrible meaning of late frosts and scathing east winds. The year 1874 will be long remembered for its frosts, and winds nearly as late as midsummer. Here, in South Yorkshire, where we are high and inland, the thermometer did not fall below 33° or 34°, though it did do so in many places in the southern and midland counties; but the east winds told upon us with destructive effect. We have seldom seen fruit trees so laden with bloom as they were this year before the winds came; but the result has been scarcely a bushel of Apples and Pears in the whole district. Vegetables, too, were brought to a complete stand-still. The experience thus gained has made us think more than usual of the advisability of returning to the old practice of mixing crops, by running rows of Peas or other tall-growing vegetables at intervals between crops of such things as Potatoes, French Beans, or Cauliflowers, &c., instead of confining each to quarters by themselves—an arrangement by which ground is saved and convenience gained. It is surprising how much a row of Pea-sticks even will break the blast, and a hedge of Black Currant bushes run across a quarter is almost as good as a wall. Raspberries, also, may be used with signal effect for the same purpose. We have noticed the important advantages of such slight protectors this year in many instances. We are acquainted with some gardens from 6 to 8 acres in extent within the walls, where everything is arranged in squares, over which the wind sweeps as scathingly as if they were in the open field. How much better would it be if in such large kitchen gardens the quarters were sub-divided by close rows of pyramid fruit trees, Currant bushes, and in summer by the growing of Peas, Scarlet Runners, and similar crops. The boundary walls of a kitchen garden are undoubtedly a great protection themselves, but when the area enclosed exceeds 3 or 4 acres, it is obvious that they can afford but little shelter to the central portions of the ground, and it is certainly better in such a case to run a central wall through the garden—a plan against which no objections can be urged that we can see, though in mostly all new kitchen gardens that we know of, the middle wall has been discarded, seemingly for the sake of permitting sweeping lengths of ribbon-borders only. Walls, however, and other modes of protection of a similar kind, are of secondary importance to the site of the garden. From north and east winds, and from those western hurricanes which are so destructive to such Apples and Pears as have escaped spring frosts, there is no protection like a

belt of tall trees or a piece of rising ground between these points and the garden, though such objects should not be so near as to be injurious by their shade. Here we are completely shut in from the north and west by tall Elms, and in stormy weather, though the wind "roars and rustles" outside the barrier, it is scarcely felt inside the garden. The terrific gale which passed over the country last spring raged with extreme fury here, prostrating many gigantic trees just outside the walls; but, thanks to the Elms in question, it was comparatively little felt in the garden, though outside of the belt no glass roof could have resisted the wind.—*The Gardener.*

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Flower Garden and Pleasure Ground.

WHEREVER a system of spring bedding is intended, the planting of the various species of plants and bulbs should now be finished as soon as possible, in order to give the plants used for the purpose time to establish themselves in their new position before severe frost or wintery weather sets in. It is also quite time that all bulbs used for this purpose should be in the ground, in order to induce, as much as possible, early flowering, and the consequent early ripening, of the bulbs, so as to admit of their being taken up by the time that the beds are required for the summer bedding plants. In some instances, where the summer flower garden may not be a conspicuous object from the windows of the residence, or where it may be at a considerable distance from it, or in cases where a garden is laid out in some part of the grounds for the express purpose of growing spring flowering plants and early bulbs—under such circumstances it may possibly be considered unnecessary to plant the beds of the summer flower garden with spring flowering plants, thus compelling them, as it were, to do double duty, and subjecting them to exhausting effects. It is true that much has been said and written against the so-called unsightly masses of bare earth which flower gardens generally present during the ensuing five or six months. In reality, however, there is much less in this than might at first sight appear to be the case; as, taking one season with another, during at least one-half the above-named period the surfaces of all flower beds are either frost-bound or hid from view by their winter mantle of snow, during which time it is quite immaterial as to whether they are furnished or otherwise. After all, too, there is nothing so very unsightly in neatly-formed beds of fresh soil, composing an artistically-designed garden surrounded by closely-cut and well-swept green sward. But, wherever it may be intended to forego the use of winter and spring flowers in such gardens, the beds should, nevertheless, be neatly dug over as soon as the summer bedding plants are removed; the Grass should be again mowed, if at all necessary, swept, and well rolled down, and put into the best order possible for the winter; while in the soil yard, or in some other out of the way, but convenient, place, preparations should be made for collecting and preparing the necessary quantity of fertilising materials, with which to enrich the flower beds, and borders for the following season. This compost may, of course, consist of various materials, such as well-rotted stable-yard or hot-bed manure, well decayed leaf soil, and, if procurable, a portion of the top spit from an old pasture, or sound maiden loam in any form, which should be well chopped up, and mixed with the other ingredients, and should be frequently turned during the winter months, and applied to the beds and borders in spring, in accordance with the probable requirements of the different kinds of plants, which are intended to occupy them. This circumstance should always be kept in view, as for some varieties of bedding plants, the soil can, as a rule, hardly be rendered too rich; while for others, highly enriched soil is by no means desirable, as it tends to produce an over luxuriance as regards foliage, and a corresponding paucity in flowers. The bulbs and tubers of such plants as Cannas, Dahlias, Gladioli, Tigridias, Caladium esculentum, Commelina cœlestis, Marvel of Peru, &c., should now be taken carefully up, and after being well dried should be stored in some secure place, out of the reach of frost. The roots of such varieties of plants as the three last-named may, with advantage, be packed in Cocoa-nut fibre, dry earth, ashes, or sand. Pot up rooted layers of Carnations and Picotees, rooted cuttings of choice Pansies, &c. Cut down the decaying flower stems of Hollyhocks and other hardy herbaceous plants, and any very choice or scarce varieties of the former, may for greater safety, and for the purpose of more rapidly increasing them, be lifted and potted. Keep lawns and walks as free as possible from falling leaves, worm casts, and other littery matter. Attend to the stock of bedding plants, giving air in abundance whenever the state of the weather will permit, and water only when it is really required.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Bouquet Flowers in Season.

Our flower markets are now abundantly stocked with Dahlias, which, though not perhaps strictly speaking bouquet flowers, may, nevertheless, be ranked amongst useful table ornaments. For bold arrangements in halls, too, their rich colours display themselves with excellent effect. It is, however, somewhat difficult to arrange them nicely, as, in some instances, the flower-stalks are not of sufficient thickness to carry the blooms erect. In order to remedy this, a steel wire should be bound up the stem, which it will support most effectually. Plenty of the handsome spikes of the purplish-blue *Veronica*, too, may now be obtained; these associate well with light-coloured Dahlias, and, at this season, are in other respects most useful, as they will remain fresh in water for over a week. If Ferns are selected for mixing with such flowers as those just enumerated, they should consist of strong growing varieties, as fronds of the delicate Maiden-hair and similar kinds would not be in keeping with flowers of such large size. A few sprays of the old-fashioned *Fuchsia fulgens*, placed amongst dark-coloured Dahlias, look well. This *Fuchsia* is now in perfection, and, though not much grown for cutting, is well suited for that purpose, its handsome drooping bells and fine foliage being alike ornamental. *Cyclamen* blooms, though not plentiful, are beginning to make their appearance, but these do best in a tube glass, intermixed with a few fronds of delicate Ferns; in this manner they form very elegant little floral ornaments either for placing on the dinner-table or in the drawing-room.—A. HASSARD.

Indoor Plant Department.

Chrysanthemums which are now fast coming into flower, should hold a prominent position in conservatories for some time to come. If the house in which they are to be placed is tolerably light, these plants will bear setting moderately close, yet do not crowd them, or the leaves will suffer and begin to decay before the flowering is over. The later varieties, which have been prepared to succeed the earliest flowering kinds, should be well attended to as regards thinning the flowers and removing suckers and useless side-shoots, which, if allowed to remain, impoverish the plants and correspondingly injure their ability to flower. If mildew presents itself, at once apply flowers of sulphur. Any stove plants, or such as require through the winter an intermediate house temperature, should now be removed from the conservatory to warmer quarters, or they will suffer; for the temperature of conservatories for the next six weeks ought to be kept no higher than just sufficiently warm to expel damp. From 40° to 45° at night will be ample, as a higher temperature shortens the flowering period of the greater portion of the occupants; it also stops roof climbers, or any plants that are planted out permanently in borders, from making growth at this season, when the less excitement they receive the better. Now that plants used for roof drapery are comparatively at rest and their growth matured, they should be thoroughly cleared of any insects with which they may happen to be infested. The first lot of *Hyacinths* should be got into heat at once if they have pushed sufficiently, more especially as regards abundance of roots. Plants of *Narcissus* should be similarly treated. The best winter-flowering scarlet *Geraniums*, that will stand heat, should now receive every attention. A little heat, plenty of light, and no more water than will just keep the roots in action and the plants from flagging, will induce a greater disposition to flower than any other kind of treatment. Give every attention to the first lot of *Primulas* and *Cinerarias*, which should now be throwing up flower-trusses. Keep the *Primulas* as near the glass as possible, and give them just sufficient water at the roots to keep the soil in a healthy condition. *Cinerarias* should have more water, and the atmosphere for the latter must not be so dry as for the *Primulas*, or they will lose their under leaves. Pot more *Hyacinths*, *Narcissi*, *Crocuses*, *Tulips*, *Hoteia* (*Spiræa*) *japonica*, *Christmas Roses*, and the old *Scilla sibirica*, which is invaluable for its colour, and requires little or no heat to induce it to open its beautiful blue flowers. *Poinsettias* and *Euphorbias* will require a moderate amount of heat, say 60° night temperature, to induce them to bloom freely. A few plants of *Centaurea* (any of the varieties, but *ragusina* is the best) may now be introduced into the conservatory with advantage. *C. ragusina* looks well anywhere; its silvery leaves are excellent for cutting for vases or even for bouquets. Some of the early struck plants of *Hydrangea* will, in all probability, be showing flower, and should therefore be introduced at once into a little heat; they will come in at a time when they will be much wanted, and will last in good condition for weeks. Pot late struck *Hydrangeas*, using peat and a little sand for a portion of the stock, with loam and sand for the others; by this means in all probability the two colours, blue and pink, will be secured. *Pelargoniums* that have been shaken out and re-potted should stand near the glass and receive as much light as possible. If there is not a house or pit in which they can be placed by themselves, they should be placed in the best situations available,

where they can be accommodated with a night temperature of from 40° to 45°; give plenty of air in the day-time, and keep the soil much drier than is required for most other plants, or the roots will suffer and the shoots become unduly attenuated. Where *Pelargoniums* are grown with the view of forming specimens, they should have all their shoots tied out, bringing them down as low as the rim of the pot. Seedling herbaceous *Calceolarias* should now be potted, using for the purpose large-sized thumb pots; the soil should be good turfy loam, three parts; sifted leaf-mould, rotten dung, and sand, two parts. Keep them near the glass, with an atmosphere somewhat humid—similar, indeed, to that recommended for *Cinerarias*. Plants of *Lilium auratum* should now be re-potted, taking care not to injure the roots in the operation. Remove the dead tops from *L. lancifolium*.

Indoor Fruit Department.

Fermenting leaves and litter should now be placed on the inside border of the early Vinery to the depth of about 2 feet. In addition to furnishing heat to the roots, this supplies sufficient atmospheric warmth for a considerable time without the aid of fire-heat. Keep the temperature at 55° at night, until growth is somewhat advanced. If the cold outside is severe, a little fire-heat will be needed to maintain this warmth, but not otherwise. The temperature may be allowed to rise to 60° without air during the day-time, and 65° with it. Dew the rods overhead morning and evening with the syringe, using water not colder than the temperature of the house; close the ventilators early in the afternoon, and always aim at securing as much natural heat as possible, as it is the best for promoting healthy growth. The early Vinery will now be a suitable receptacle for both soft and hard-wooded plants intended to furnish cut flowers for decorative purposes. All kinds of heating apparatuses connected with forcing-houses should now be examined and put thoroughly in order, as much damage is frequently the result of neglecting this until too late. Remove from the pipes, along with the water, any sediment that may have accumulated in them during the past season, refill them with clean water, and, when empty, take the opportunity of tightly cementing any leakage that may exist about the joints. Portland cement, mixed to a mortar-like consistency, is the best material to use for this purpose; it is as hard and durable as iron filings, when properly set. All the most decayed-looking leaves should be removed from Vines, especially from those on which fruit is still hanging. A little artificial heat applied to these now and then, assists greatly in obviating damp. The second batch of *Queen Pines* should now be allowed to go to rest, by lowering the temperature and keeping them moderately dry at the root; 55° with fire-heat will be sufficient for them. Growth among any kind of *Pines* should not now be encouraged; on the contrary, the aim should be to keep that which they have made as undisturbed as possible. Continue to give fruits swelling weak supplies of manure-water when necessary, and maintain a temperature of about 70° at night, allowing it to rise 10°, or so, above that during the day. Plants, the fruit of which is just emerging from the socket, should be fully exposed to all the light possible, otherwise, the fruit will come up reluctantly, and deformed development is often the result. Subdue the aridity of the atmosphere by sprinkling the paths with water, and the surface of the plunging material in pits where no paths exist. Avoid syringing overhead. Never let the evaporating troughs become empty. If not previously done, have all fractures likely to admit drip repaired at once.—J. MUIR, *Clovenfords*.

Hardy Fruit.

This is a good time to prune the hardest fruit trees in open quarters, or in orchards. One great reason for the decline of orchard fruit-culture is, the total neglect of pruning and other cultural expedients. Too often the trees are simply planted, with care or not, as it may happen, and then they are left to shift for themselves. Singularly enough, they do this as a rule, worse when the ground is laid down in Grass, than on arable land. The reason is thought to be, that the Grass always growing, impoverishes the roots by exhausting the soil over them. This view is confirmed by the fact, that the removal of the Grass has resulted in the restoration of the trees to stronger health and a higher degree of fertility. The practice of top-dressing fruit trees in Grass orchards, has also been attended with the most beneficial results. An old Devonshire orchardist once assured me that to ensure health and fertility in perpetuity, the turf over the roots of fruit trees should be taken up annually, and a top-dressing applied each second year. There can be no doubt, that it is good practice to frequently disturb the turf over the roots, and apply some fresh earth as a top dressing. I have seen the most astonishing results from the adoption of the practice with Conifers as well as fruit trees; and this is just the season to whip off the turf, apply the dressing, and replace the Grass; for the activity of root-action in November can hardly have failed to have struck most

cultivators. The activity of the healing processes extends to the tops of trees also, though not with the same energy, as in the case of the roots that are thoroughly protected by the earth, and found in a more uniform temperature; hence, this is also the best season for top pruning. As a general rule, subject to many modifications, I would counsel the cutting out of the weakest shoots chiefly. So much has been written on weakness as an aid to fertility, that cultivators have been, on that account, misled in pruning. The fertility that is born of weakness is sure to be short-lived and the produce puny. Remove the weak wood from trees, and compel the strong to bear by leaving it full length; and, if that is not sufficient, then lay the knife on the roots. And this last will force fertility. But root-pruning may easily be carried to excess, so as to cripple the vital force; which must be avoided. It is better to lead the strongest branches into fertile ways than to force them to it through root-manipulation. Either way, trees should be nourished while bearing fruit by judicious top-dressings. Prune also for fruit more even than for form. Combine both objects if possible, but if one of the two must be sacrificed let that one be form.—D. T. FISH.

Kitchen Garden.

Cauliflowers, as a rule, do not survive our winters without protection; no time should, therefore, now be lost in getting the young plants under cover. Where it is intended to winter them in frames, they should be placed on a hard bottom, such as a hard coal-ash bed, where pot-plants have stood during summer; this will help to keep the worms out of the frames, which, unless some precaution of this kind is taken, are frequently troublesome in autumn and winter. Shallow frames are better than deep ones, as they admit of the plants being close to the glass, which is a point of some importance. About 6 inches of good soil, sandy rather than adhesive, should be spread, and the plants pricked out about 4 inches apart. A few plants of the later sowing might be potted in 3-inch pots, and plunged somewhere near the glass. I like this plan of potting a part of the stock, as it enables us, if damp dull weather prevails, and if mildew is prevalent, to move the plants to a dry cool house, where, on a shelf near the glass, they soon improve amazingly; in fact, where space can be found, this is the best way of wintering Cauliflowers. A few plants might also be put out finally under hand-lights, if desired, although there is not much gained by doing this before February. The site for the hand-lights should be warm and well-sheltered, and the soil be specially prepared by digging in a quantity of good manure. A liberal dosing of soot will also be beneficial in keeping slugs at a distance, and in banishing the Cauliflower grub that is so often destructive in spring. About six plants might be planted under each light, to be finally thinned out to three, or, at the most, four in February; but, of course, the thinnings could be planted elsewhere to form a succession. In the southern and western counties, Cauliflowers may generally be safely wintered at the foot of a south wall or fence, especially if a shallow trench has been formed and the plants pricked out about 6 inches apart. When frost sets in, a row of stable litter may be placed along the front; and a few evergreen branches laid over the plants will keep all safe. As we may now shortly expect frost severe enough to injure Cauliflowers that are turning in, some means of protecting them should be at hand; the best way is, when the change of weather is apprehended—and there are always some signs by which an observant person may tell when bad weather is near at hand—to lift all that are fit for use, or nearly so, if they are large enough to be spoiled by frost; all those that are about the size of a small teacup, and that may be expected to grow a little more, should be planted close together in a deep cool pit, where they may have all the air possible without letting in rain or frost. The larger ones may be layed in thickly on some sandy bank or elevated spot in the open air, where it will be a very easy matter to keep the frost from them, by covering with straw, mats, or hurdles thatched with straw; or dry Fern would do equally well. I have often kept them in this way till after Christmas. Before lifting them—which can be best done with a steel fork—remove two or three of the bottom leaves, as they will only get broken, and tie the others loosely over the head; lift the plants with as much ball as will adhere closely to the roots, and plant them deeply, laying them in a slanting direction, with the heads to the north. Late Celery will now soon require attention in earthing up; it has grown amazingly during the last three weeks. If snails or slugs are likely to be troublesome, soot or lime should be scattered about amongst the plants and soil as the work proceeds; or, if burnt earth or ashes could be obtained in quantity sufficient for the latest crop, it would be very desirable to have it; as not only will it banish the slugs, but, being of a porous nature, the Celery will not be so liable to suffer from damp accumulating and causing premature decay.—E. HOBDAK.

Cottagers' Gardens.

The mild weather which we are now experiencing will induce late growth, not only in all green crops, but also in weeds. The latter must, therefore, be eradicated on every favourable occasion. All kinds of Broccoli, now in luxuriant growth, will be liable to suffer from the effects of frost should it set in soon; they should, therefore, be laid with their crowns to the north, a position in which they will withstand a considerable degree of cold, and in which they can be easily protected with any kind of temporary covering, in cases of very severe weather. Look over Apple, Onion, and other stores, and pick out anything that is decaying. Also see that the covering on Potato ridges effectually excludes wet. Chrysanthemums, which will now form the principal source of attraction in flower borders, should be neatly staked. Pot plants should generally be kept rather drier at the root than they hitherto have been; but, when exposed to a dry dusty atmosphere, a good washing overhead occasionally will greatly invigorate them. Calceolarias should now be potted in rich light soil; when well grown in a cool moist atmosphere, and screened from bright sunshine, they make valuable window plants. Chinese Primulas should now be coming into bloom, and, with the addition of a few berry-bearing plants, will serve to keep windows gay until the earliest bulbs are ready to succeed them.—J. G.

Evelyn's "Gardener's Calendar" for October, 1899.

To be done in the Orchard and Olitary Garden.—Trench ground for orcharding, and the kitchen garden, to lie for a winter mellowing. Plant dry trees (*i.e.*, Fruit of all sorts, Standard, Mural, or shrubs which lose their leaf; and that so soon as it falls: but be sure you chuse no Trees for the Wall of above two years Grafting at the most, sound and smooth. Now is the time for Ablaqueation, and laying bare the Roots of old unthriving, or over hasty-blooming trees. Moon now decreasing, gather Winter-fruit that remains, weather dry; take heed of bruising, lay them up clean lest they taint; cut and prune Roses yearly, reducing them to a Standard not over tall. Plant, and Plash Quick-sets. Remove Grafts after the second year, unless Dwarfs, which you may let stand 'till the third. Save, and sow all stony, and hard kernels and seeds; such as black Cherry, Morellos, black Heart, all good; Pear-plum, Peach, Almond-stones, &c. Also Nuts, Haws, Ashen, Sycomor, and Maple keys; Acorns, Beech mast, Apple, Pear, and Crab kernels, for Stocks; or you may defer it till the next Month towards the latter end, keeping them dry, and free from mustiness; remembering to cover the beds with litter. You may yet sow Genoa Lettuce which will last all the Winter, Reddish, &c. Make Winter Cider, and Perry. Towards the latter end, plant Abricots, Cherries, Plums, Vines, Winter Pears, &c.

Fruits in Prime, or yet Lasting.—Apples: Belle-et-Bonne, William, Costard, Lording, Parsley-apples, Pearmain, Pear-apple, Honeymeal, Apis, &c. Pears: The Caw-pear (baking) Greenbutter-pear, Thorn-pear, Clove-pear, Roussel-pear, Lombard-pear, Russet-pear, Saffron-pear, and some of the former Month, Violet-pear, Petworth-pear, otherwise call'd the Winter Windsor. Bullis, and divers of the September Plums and Grapes, Pines, Arbutus, &c.

To be done in the Parterre and Flower Garden.—Now your Hyacinthus Tuberoses not enduring the wet, must be set into the house, and preserved very dry till April. Continue sowing what you did in September if you please: Likewise Cypress may be sown, but take heed of the Frost: *vide* Mar. Also, You may plant some Anemonies, especially the *Tenuifolia's*, and *Ranunculus's*, in fresh, sandish earth, taken from under the turf, but lay richer mould at the bottom of the bed, which the fibres may reach, but not touch the main roots, which are to be cover'd with the natural earth two inches deep: and so soon as they appear, secure them with Mats, or dry straw, from the winds and frosts, giving them air in all benigne intervals, if possible once a day. Plant also *Ranunculus's* of Tripoly, Vernal Crocus's, &c. Remove seedling Holy-hocs, or others. Plant now your choice Tulips, &c. which you feared to interre at the beginning of September; they will be more secure, and forward enough: but plant them in natural earth somewhat impoverished with very fine sand; else they will soon lose their variegations; some more rich earth may lie at the bottom, within reach of the fibres (as above:) Now have a care your Carnations catch not too much wet; therefore retire them to covert, where they may be kept from the rain, not the air, or lay them on the sides; trimming them with fresh mould. All sorts of Bulbous roots may now also be safely buried; likewise Iris's, &c. You may yet sow Alaternus, and Phillyrea seeds. It will now be good to Beat, Roll, and Mow Carpet-walks, and Cammole; for now the ground is supple, and it will even all inequalities: Finish your last Weeding, &c. Sweep, and cleanse your Walks, and all other places, from Autumnal leaves fallen, lest the Worms draw them into their holes, and foul your Gardens, &c.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

PRACTICAL HINTS ON NEW GROUND WORK.

THE love of change may be said to be inherent in most of us, but especially in gardeners, both amateur and professional, who, as a rule, seem to be rather sceptical concerning the poets' dogma, that "a thing of beauty is a joy for ever," and they are supported by their own garden poet, who declares that "prospects, however lovely, may be seen till half their beauty fades." There is, therefore, every excuse to be made for both employers and gardeners who, at this season, evince a desire for making alterations and improvements; and there is hardly a place where something may not be done by which its interest and beauty may be considerably enhanced. Wherever alterations are in contemplation, if a professional landscape gardener is not called in to advise, the main features of the contemplated alterations should be thoroughly considered, and a correct working plan made, before anything further is done. Improvements in small details may probably suggest themselves as the work proceeds, but nothing can be more annoying to all concerned than to find, after considerable progress has been made, that some fundamental blunder has been committed, which renders it necessary to do a good deal of the work over again. Of course, where a professional landscape gardener has been employed this rarely happens, but a vast deal of the work of this kind that is annually done is the joint production of the proprietor and his friends, with, perhaps, an occasional word of advice from his head gardener. All gardeners cannot have a knowledge of the principles of landscape gardening, and I do not know that it is necessary that they should; but, at least, all should have a knowledge of working from drawings or plans so as to be able to carry out efficiently any work of the kind that they may be called upon to execute. To a man not practically acquainted with such things it may seem a simple matter to alter certain ground levels and turf them over; but this is a kind of work that calls for a considerable amount of practical knowledge, seldom possessed without a certain amount of special training, if it is expected to stand for years unimpaired. In the first place, in laying down designs or making alterations in the lie of the ground, no man should trust to the eye alone, however true it may be; on the contrary, everything should be rigidly carried out by tape and level; and good stout stumps, that cannot easily be moved, should be driven in at short intervals, so that the straight edge will easily reach from one line of stumps to another throughout the whole extent of the ground operations. And not only should this be done in geometrical gardening, but also as far as possible in the more picturesque portions of the grounds where graceful, easy-flowing undulations are admissible, for the best design may be marred by bad workmanship in carrying it out. In laying down new turf, it is most important to see that the ground has been properly prepared; where it has to be raised or made up, see that it is well rammed as the work goes on; if this is neglected, it eventually settles into holes and hills, before many years are passed, that will cost far more to put right than it would have done to execute the work well at once. It may be added, that imperfectly done work never looks well even at the outset; and these earth settlements may go on for years, and the turf have to be taken up time after time, and all for want of a little more care and labour being bestowed upon it in the first instance. In laying down turf, much time and labour will be saved if the turfs are all cut exactly of the same size. The best way of securing this is to have boards made one inch thick and the required size—say, about 3 feet long and 1 wide. Where the turf is good and tough, a man may take one of those boards, lay it flat on the Grass, and cut all round it; he then moves his board and cuts again, and so on, taking care to stand on the board while he is cutting, which will keep it in its true position. This is a far quicker and better method than cutting by the line; for no man, however careful, can cut his turves all the same width by the line alone; and the time lost

in laying turves of irregular sizes would be considerable; while any man that had never handled a tool before, could cut close to a board. In altering ground-levels where the sub-soil is bad, the surface-soil should be taken off and reserved to go on the surface again. If turf is expected to maintain its colour in dry seasons, a good depth of soil is absolutely necessary, and, especially so, in the case of terraces and slopes that are much exposed to the sun. In making new gardens, if good turf can be easily obtained, it will be found to answer far more satisfactorily than sowing Grass seeds, even when the additional cost is considered; but in cases where it may be necessary to depend in the main upon seeds, all the more prominent points, such as edgings, &c., should be turfed. There is a mode of turfing by what is termed inoculation, which I have sometimes seen practised. It consists in laying down small bits of turf at short intervals, with the view of their uniting and making a close sward. This plan, however, is at best, but a makeshift, and should be adopted only as a last resource; and be helped, moreover, with a top dressing in spring, supplemented, if necessary, by scattering a few seeds of the finer Grasses over it. The most satisfactory example of inoculation I have yet witnessed, was performed in the following manner:—The available turf was collected into convenient heaps and chopped up into very small bits and scattered evenly over the whole surface, and then thoroughly rolled down, the rolling being repeated as often as necessary. This was in the month of March, and, showery weather following, the bits of Grass grew rapidly, and, in a short time, made a fine piece of lawn; but, wherever this plan is adopted, the turf so created must have time to establish itself thoroughly before either scythe or mowing machine are put to work upon it. One word may be advisable as to the management of men employed to carry out work of this kind. I have found it best to take them, as it were, into my confidence, and let them understand the methods I intend to adopt in carrying out the work, and the result I wish to effect, so that they may thoroughly understand all about it. There is a good deal of force in the proverb, "He who hesitates is lost," and there is no question that a hesitating manner in dealing with workmen, or doing the work piecemeal, as it were, has a depressing influence upon those employed, that is, "if they are worth their salt." E. HOBDAY.

The Gardens of the Hesperides.—In this age of general research, every day, so to speak, is bringing to light facts which go far to prove that all the legends and fables of the ancient world had their origin in solid realities, and that all the gilding of poets, and all the wild superstitions of historians have not rendered these realities unrecognisable, when modern research has signalled their discovery. The beautiful legend concerning the three daughters of the evening star Hespera, who dwelt in a lovely hidden garden near the northern coast of Africa, in which the melodious accent of their songs was heard, though the singers were never seen, on account of the lofty wall of rocks piled by the gods, which surrounded the garden, is founded on very simple facts, as regards the garden itself. Even the golden fruits, and the dragon Ladon who, issuing from his dark cave, guarded its entrance, have their foundation in fact—the embellishments of the poetic legend, regarding both golden fruit and dragon, being faithful picturings, very little more highly coloured than those of modern poets. The lovely garden valley, watered by many streams, and near which the great city of Berenice arose afterwards under the Egyptian rule of the Ptolomies, still exists in all its primeval beauty. The fabulous rock-piled walls are, the great mountain cleft, in which lies, softly sheltered, a deeply depressed winding valley, full of the richest vegetation at all seasons, its golden fruits being those of Orange and Lemon trees, which bear both flowers and fruit all the year round. The dragon, is neither more nor less than the tortuously winding stream, issuing from a cave, which crosses the entrance of the valley, and seems to prevent all access to its picturesque recesses. Now, that more than usual attention has been called to the real existence of the garden of the Hesperides, in consequence of the village of Bengazi, which occupies the site of the ancient Berenice, having been signalled as one of the secret seats of the slave dealers (whose proceedings are about to be suppressed), we shall, doubtless, have the ever enterprising Mr. Cook conducting his Egyptian tourists to the spot, by a small detour, at so much a head; and the gardens of "The Hesperides" will go down in his list of stations for so many hours, or days, halt, as may be found convenient; all for a very moderate extra charge of so many piastres.

NOTES OF THE WEEK.

— AMERICAN Apples of the past season's growth are now selling at moderate rates in provincial towns, both in England and Ireland. The highly coloured and well-flavoured Baldwin is the commonest kind as yet. As usual, they come in barrels without any kind of packing material, and come, as a rule, in excellent condition. That Apples should be sent several thousand miles, and then be sold as cheaply as home-grown fruit, is a noteworthy fact. At this rate of progress, fruitless and cold regions will soon be supplied with the finest fruits at a cost that places them within the reach of all classes.

— THE appearance of the Phylloxera in Austria has been announced in the *Official Journal* in the following passage:—"One of the Vines of the central establishment, created in Lower Austria for the culture of fruit-bearing trees, has been found to be affected by Phylloxera, which had evidently been imported with Vine plants received from America in 1869." All the Vines of that kind will therefore be immediately destroyed; and the authorities are taking every precaution in their power to prevent an extension of the evil.

— At the late Lyons horticultural exhibition, the new and fine-looking seedling Pear, Abbé Pétel, a Calebasse, excited general attention; but, owing to the present exceptional season having matured many kinds of Pears before their usual period of ripening, thus, in all probability, depriving them of their special qualities both as to flavour and keeping, many connoisseurs have been induced to withhold, for the present, their final judgment as regards the merits of this promising new Pear.

— CATTLEYA GIGAS has just flowered in Lord Londesborough's collection at Norbiton. It is one of the best of the many forms which all more or less resemble the true old *C. labiata*, one of the rarest of all the Cattleyas. The true form is, however, bearing fifteen flowers on three spikes, in the above collection, and is certainly a noble object, the flowers being nearly 9 inches across, and of a rich lilac colour, beautifully veined and frilled. The lip is stained with crimson-purple, suffused with gold and delicately veined. A pure white form of the *Odontoglossum Roezlii*, is also in bloom in the same collection, and is characterised by great breadth both of leaves and segments of the flowers.

— MESSRS. VEITCH'S nursery, at Chelsea, is at present well worth a visit, the Pitcher plants there being just now in splendid condition, and the show of Chrysanthemums strikingly brilliant. Prominent among them were the following, viz.:—*Elaine*, pure white; *Beverley*, also a fine white; *Golden Beverley*, rich yellow; *Aureum multiflorum*, soft golden-yellow, distinct and fine; *Empress of India*, still one of the finest whites; and *Jardin des Plantes*, unsurpassed among yellows. One of the best rosy-lilac show kinds is *Princess of Wales*; and *Venus* is also good. Amongst the Japanese forms, *Fair Maid of Guernsey* has flowers fully 7 or 8 inches in diameter. The Pine-apple Place Nurseries, Maida Vale, are also now gay with Chrysanthemums, and well worth a visit; as also the fine collections of these plants at Messrs. Dixon's, Amhurst Road, Hackney, and Messrs. Cutbush's, at Highgate. Chrysanthemums, indeed, are at present everywhere unusually brilliant.

— WHETHER or not the visitors to the Brighton Aquarium go there with any idea of becoming more intimately acquainted with the wonders of the deep or not, there is no doubt that an exhibition of ocean plants would be, at least, as popular as one of fish. A sea-weed, in a growing state in its native element, is very different from sea-weed cast up on the shore, and a careful selection and arrangement of growing specimens would greatly enhance the interest of the tanks. We may supplement these remarks from *Nature* with a suggestion, that an aquarium, constructed expressly for sea-weeds alone—a kind of "ocean garden"—might in itself form a very popular and interesting exhibition, if sufficiently extensive, and containing a vast collection of marine algæ from all parts of the world, many of which are grand as well as beautiful examples of vegetation.

— Now, when we have little in bloom in outdoor borders except Chrysanthemums, an enumeration of a few of the best Michaelmas Daisies or hardy Asters in flower at Kew may not be uninteresting. Foremost among them may be named *A. grandiflorus*, a fine kind more thickly studded with large purplish-blue coloured flowers than we have ever before seen it in an open bed. *A. puniceus* is also now in great beauty; it attains a height of about 5 feet, is profusely studded with good-sized pale lilac-blue flowers, and forms a fitting associate for such kinds as *pendulus* and *Novæ Angliæ pulchellus*, of which there are also now good examples in flower at Kew. The dwarf *Aster versicolor* is likewise still blooming profusely in beds, where it will doubtless continue in beauty for some time yet to come. Of other plants in bloom the most striking are *Tricyrtis hirta*, which, on a sheltered border, has grown luxuriantly during the past season and is now

bearing its peculiar-looking spotted flowers in tolerable abundance; *Ophiopogon spicatus*, a tuft of which is thickly covered with spikes of lilac-coloured blooms is likewise very pretty.

— THE Cryptogamic herbarium of Mr. T. Carroll, of Cork, rich in Irish Lichens, and containing many of the late Admiral Jones's specimens, has been acquired by the British Museum.

— A WORK on St. Helena and its products, by Mr. J. C. Mellis (near completion), is to contain a complete flora of that island, illustrated by coloured plates, which will include several of the now almost extinct Arborescent Compositæ.

— M. F. GAILLARD, of Bregnaix, sent to the exhibition, instituted by the Association Horticole Lyonnaise, a magnificent collection of 160 distinct varieties of choice Grapes—an interesting and instructive display such as is seldom met with.

— THE new variety of the Burnet Rose, discovered by Mr. J. M. Webb, in 1873, in hedges near Hoyle, in Cheshire, is, we believe, to be named *Rosa involuta Webbii*. It is a distinct and pretty variety, well worth the attention of lovers of the better kinds of English wild Roses.

— THE exhibition of Fungi, at Munich, which was held last month in the Crystal Palace, proved a great success. The arrangements and classification were exceedingly good, the edible kinds being clearly indicated. It is said that over 40,000 persons visited the exhibition, though it was only kept open eight days.

— DURING an excursion of the Scottish Botanical Alpine Club, in August last, to the Aberdeen and Forfarshire Mountains, Mr. John Sadler discovered a singular Alpine Willow, which will be named *Salix Sadleri*. It is to be fully described and figured in the forthcoming journal of the Edinburgh Botanical Society.

— THE new seedling Strawberry raised by Mr. Corbin, head gardener to the Marquis of Mortemart, at Lachassagne, has been pronounced, by a horticultural commissioner sent to examine it in a growing state, to be the best variety yet produced. Notwithstanding the advanced season, the plants were found still covered with both fruit and flowers. It is said to be a kind well-suited for forcing.

— THE ground cultivated by market gardeners in and around Paris amounts to over 3,000 acres. It is stated that 360,000 glazed frames, and more than 2,000,000 cloches are employed in the production of vegetables alone. The annual amount expended for manure is said to be £72,400, and the total receipts from the sale of vegetables and other productions of the market gardens to exceed half a million sterling—a sum probably much under the mark.

— LOVERS of wall plants, particularly those who reside in the milder parts of the kingdom, should not overlook *Solanum jasminoides*, a plant well suited for such positions, and one which possesses the good property of being a continuous bloomer. A plant of it, occupying a wall pillar in the Royal Gardens, at Kew, was in bloom as long ago as June last; a condition in which it has remained throughout the summer and autumn months, and even now it is literally covered with blossom.

— AN international exhibition of fruit is announced to take place at Amsterdam in 1875, when a general pomological congress is to be convened. The names of the gentlemen of the commission of general management, comprising those of some of the most eminent of the Dutch horticulturists, is a sufficient guarantee that the arrangements will be judicious and complete. It is intended that the congress should occupy itself very specially with the nomenclature of fruit-bearing trees and shrubs.

— THE doctrine (says *Nature*) that the conspicuous colours of flowers are entirely due to the necessity for cross-fertilisation by the agency of insects seems to be taking the world by storm. It is supported by Mr. Darwin and Sir John Lubbock. It could scarcely be put forward on better authority. Yet there are several facts with which it does not harmonise. For instance: 1. Cultivation increases the size and colour of flowers quite independently of the existence or non-existence of insects.—2. Double flowers in which the doubling arises from metamorphosis of stamens or pistils are more showy than the single forms, yet insects can be of little use to them, since they are either partially or entirely barren. The double-blossomed Cherry is brilliantly conspicuous, but it bears no fruit.—3. Such abortive flowers as the cultivated Guelder Rose and *Hydrangea* depend for their beauty upon the destruction of the reproductive organs. If their increased splendour is meant only as a lure to insects, it is surely an absurd failure.—4. The autumn colours of leaves and fruits can serve no such purpose, yet these are often as bright and conspicuous as the flowers of summer.—5. Fungi and Lichens exhibit brilliant colours, which can have nothing to do with insect-fertilisation. Do not these facts indicate that though insects may be attracted by conspicuous colours, and may have some influence in the maintenance of coloured species, there is yet a deeper and more permanent cause for the colour itself?

THE FLOWER GARDEN.

THE SNOW PLANT.

In reply to "Q.'s" enquiry (see p. 416), I beg to say that this plant is figured and described in Torrey's "*Plantæ Fremontianæ*," under the name of *Sarcodes sanguinea*. I first saw it in June at Truckee, which is the chief lumber station and entrepôt of the Nevada Mountains, where they are crossed by the Central Pacific Railway. As the train was slowly starting into motion from this station, my eye caught a man standing on the platform with a magnificent deep red flower in his hand—large enough to form a nosegay in itself—rich in colour and striking in appearance. I knew in a moment that it was the Snow flower; but, before I could signal the man to approach, we steamed away, and the Snow flower vanished from my sight. A fortnight later I was again at Truckee, and this time independent of railway trains. I was one of a small party who had come for a ten days' expedition through the neighbourhood, one or two of us to visit mines, and others, like myself, to see everything that could be seen, especially the magnificent forests of Pines, which surround Truckee on every side. We spent several days in driving, from morning to night through the never-ending leafy forest of gigantic Pines, but, as the days slipped by without ever meeting with the Snow plant, I began to fear that we were now too late for it, but, on the very last day, as we were returning to Truckee, we came upon it. We were crossing a ridge very high up, and our way laid over a shallow hollow between two crests on each side of us. The snow was lying in large patches, and completely filled up this hollow. The ground was wooded with Pines, but not thickly covered. Open spaces of no great size allowed the eye to penetrate for a short distance, and near the bottom of the hollow I descried a solitary spike of the Snow plant growing erectly out of the snow. I was out of our conveyance in a moment, and secured my prize; but I could not keep my friends waiting for an unlimited time to get it up by the root, and my experience with other reputed parasites that grow on roots had taught me that any examination of roots in that direction requires great care, plenty of time, and proper appliances, none of which I had to give. Two or three other specimens were found growing at no great distance. I brought one with me to San Francisco, where I found it to live in water for several days. From its texture, I should expect it, under its natural condition, to flower for a long time. It has something of the habit and appearance of a closely-packed gigantic Hyacinth, with a stem about the thickness of a Cabbage-stalk, the leaves and flowers closely adpressed to it, and all blood-red. The kind of plants that it most brought to my mind were some of the Bromeliaceæ, like *Billbergia* with coloured leaves; not that it has any actual affinity to them, but the flowers, and especially the calyx, are like those of that class of plant; the stem and leaves, however, are of the same kind of fleshy consistence as Cabbages. It belongs to the order, or I should prefer to say the family, Monotropaceæ, which consist of parasites, said to grow on the roots of Pine trees. Whether this is true or not, and, if sometimes true, whether it is not an accidental growth through a half-decayed root, has been doubted by some. The best known species on the Continent is *Monotropa Hypopitys*, which occurs in Germany, and from which a powder is made which is said to be good for coughs in sheep. The *Sarcodes sanguinea* has no smell, but some allied species are said to have the odour of Pinks and Violets. The family of Monotropaceæ is composed of five genera and seven species, and four of these genera and five of the species are peculiar to North America.

ANDREW MURRAY.

CLEMATIS ÆTHUSÆFOLIA.

This pretty Clematis, of unusual character, forms a very graceful and desirable addition to the already well-known species of that beautiful family of plants. Its foliage, which is extremely elegant, resembles much more closely [that of the genus *Æthusa*, or Fool's Parsley, than that of any of the family to which it belongs; from which resemblance the plant has received its specific name. The stems are delicately slender, and the plant, rising very elegantly, attains a height of 6 to 7 feet. The Campanula-shaped flowers are produced in great abundance, and are of a yellowish cream-colour. Their elongated tube recurves itself at the opening in four petals, and their drooping habit has a very pleasing effect, especially when the plant is in its season of full bloom; at which time a crowd of these drooping flowers, all open at the same time, issue at close intervals from every leading stem for 3 or 4 feet, looking like a shower of pale fire from a falling rocket; the effect of which is exceedingly charming. It is not known from whence the plant was originally received; but the seeds from which it has been raised were sent from Naples. This pretty species of Clematis flowers in August and September.

Fool's Parsley-leaved Clematis (*C. æthusaefolia*).

CROWN IMPERIALS.

THAT old inhabitant of our gardens, the Crown Imperial, is very seldom mentioned in our floricultural publications, yet it may be very appropriately classed among those worthy old garden plants that are just now somewhat neglected. There are handsome showy varieties of it, both double and single; but they are not nearly so much appreciated as they deserve to be, and are seldom planted in newly-formed gardens, though they are still found in old cottage gardens in all the glory of their vernal brightness, decked with their coronets of red, orange, or yellow flowers. Many old and well-known herbaceous plants bid fair to come to the fore once more, and it maybe there is a good future in store for the Crown Imperial. It is not necessary to enumerate the names of the assumed varieties; suffice it to state that, as far as real points of difference are concerned, they may be summed up in the single red and the single yellow, with the large flowering forms of these two, and the double red and double yellow varieties. For decorative effect the single flowers are certainly to be preferred to the double ones; though the last-named are much dearer and scarcer; for it would seem that the double flowers frequently run back to the single form. The flowers of the *Maxima* red and *Maxima* yellow, as the large-flowering varieties are designated by the Dutch growers, are nearly half as large again as the ordinary single flowers, and this not the result of a higher cultivation or a stronger development, but an abiding characteristic of the plants. The Crown Imperial may be grown and flowered in any loamy soil forming a flower border; but to do it full justice, and to ensure a fine head of bloom, it should be planted in a deep rich soil, well drained. If the soil is not rich, it must be made so by the addition of a good dressing of well-decomposed manure. The stems send out, just above the bulbs, a large number of young strong roots. At that stage of their growth, the plants will be benefited by a top dressing of decayed dung placed close to the stems; in fact, a good coating of manure of this kind can be laid about the plants during the winter, as it will give them a little protection during severe frosts. The Crown Imperial is one of those plants that, when once planted, requires to be let alone and remain undisturbed for years. Strong bulbs do not always flower the first year after planting; they appear to require to get thoroughly hold of the soil, and then the succeeding year they throw up strong

flower-spikes, crowned with their showy circlets of pendent bell-shaped blossoms. The Dutch bulb-lists name one assumed variety that has been named the Crown-on-crown Crown Imperial, on account of its tendency to produce a double ring of flowers one above the other. It would appear that it is necessary this variety should be well established and nourished, or it will not preserve this double-crowned form. It may be described as a double type of the single red variety. There are also two variegated forms, one having the green leaves margined at the sides with silver, the other with gold. Both of these are really effective out-door plants in the spring; but, to give due effect to the leaf-marking, they should be grown in clumps of several bulbs. Both of these bear red-coloured single flowers. It was an article of belief with some of our old gardeners that, if the leaf-stem of the Crown Imperial is not allowed to decay naturally, on the bulb from which it springs, the bulbs will rarely produce a successional one strong enough to bear a crown of flowers the following season; and modern practice goes to recommend that the dying flowers may be removed; while the stem, which would appear to exercise some influence on the perfect maturation of the bulbs, should be left to fall away by a process of gradual decay.

R. D.

FINE VARIETIES OF AMARANTUS.

You have alluded (see p. 341) to the fine effect produced at this late period of the season by means of masses of Love-lies-bleeding, Prince's Feather, and other well-known kinds of *Amarantus*. The effect produced by these fine old garden favourites in large masses is, no doubt, very striking; but there are more recent varieties so far more splendid, that I unhesitatingly recommend the managers of the floral displays of Hyde Park and Kensington Gardens to avail themselves of them next season. The first to be named is the scarlet-leaved weeping *Amaranth*, the *Amarante melancholique* of French gardens. The whole of the leaves and stalks of this variety are of the richest crimson-scarlet, so that the plant becomes highly ornamental as soon as the first leaves are developed. Masses of this plant may be made to produce a strikingly beautiful contrast with such as have foliage of a light vivid green, with white or yellow flowers; or, in short, with any plants in which bright green tints predominate. In such situations, it may fitly replace the handsome *Coleus Verschaffelti*, which requires the heat of a stove to bring it forward. The seeds may be sown in an open border, or, where fine early plants are required for bedding purposes, they should be sown upon a partially-exhausted hot-bed in March or April, and planted out in May. Another variety, called *A. bicolor* by seedsmen, has the under part of the leaves cool crimson, while the upper surfaces are of a warm glowing carmine of very striking character, which, at a short distance, produces the effect of splendid flowers. A third grand variety, known as *A. tricolor*, produces an effect of a very different but equally splendid character. The leaves of this finely variegated plant are alternately red, green, or yellow, while many are beautifully marked with all three colours. It is a truly ornamental plant in the strongest acceptance of the term, and, when finely grown, must charm all who see it. While so many costly novelties are run after with such avidity, it may be well to try back occasionally, and expend a few pence upon some seed-packets of recently improved varieties of *Amarantus*, although they may not be novelties of the current, or even the last, season. *AMARANTH.*

Cypripedium spectabile.—Usually Orchids are connected with hothouses and steaming vapour; but several of them come from temperate regions, and many of them are perfectly hardy. In the last class none equals in beauty the noble *C. spectabile*, a native of low meadows and bogs in North America from Canada to Carolina, chiefly in mountainous districts. Many of its congeners from warmer climates, which are to be seen in our stoves and Orchid-houses, do not equal this in beauty of colour, the large and much-inflated white lip being so beautifully stained with rosy-purple. It is as hardy as the common Dock, and every person interested in hardy flowers should endeavour to establish it. Occasionally, it is grown in pots or pans in Orchid-houses; but for this course there is no necessity. We have seen it attain a height of nearly 3 feet when planted on the north side of one of the ranges of glass in the Botanic Gardens at Glasnevin. The conditions essential to its perfect health in the open garden are, a deep peaty or other vegetable soil, and a sheltered and somewhat shaded position. In this country, the slight shelter is of more importance than the shade; strong healthy plants to begin with and moist vegetable earth not less than 2 feet deep, are more important than either. In very dry districts, it would be desirable to place the plant behind a north wall; but there can be no doubt that if the other conditions were secured, it would thrive in sheltered

borders, or on the margins of beds of shrubs. Wherever there is any kind of bold or diversified rock-garden, this should be placed on its lower flanks, in different positions and aspects, and nothing would be more strikingly beautiful and novel, than one or two isolated tufts of it on the margin of a select plantation of shrubs in the pleasure ground.

Ivy on Cemented Walls.—Let me advise "R. A." Workington, Cumberland, not to put either cement or rough cast on his house if he really wishes to clothe it with Ivy. For the last eight or nine years I have been trying to cover my house in this way, and though the Ivy has a rich border, and grows luxuriantly, it refuses to cling to the cement firmly, and each storm tears a large portion of it down. It does somewhat better on the rough cast, but neither suit it as well as stone or brick, and if your correspondent leaves his house exactly as it is, though it may appear unsightly at first, he will be repaid by the quick growth and tenacious grip of the Ivy on the walls. If he further adds a plant here and there of the beautiful *Ampelopsis Veitchii* (or Veitch's Virginian Creeper), he will be repaid by its glorious tint in the autumn, which it maintains long after the common Virginian Creeper has faded, and littered the ground with dead leaves. This small-leaved *Ampelopsis* has the same dislike to lime as the Ivy, and I cannot get it to cling well to my rough cast without an occasional nail, a support which it would scorn on either brick or stone.—J. H. W. T., Belmont, Carlou.

The Shamrock Pea (*Parochetus communis*).—Among rock and border plants, none are more worthy of culture than this. It has the leaf and habit of the common Shamrock (*i.e.*, a concise form of *Trifolium repens*), and from amid its leaves and little runners solitary blooms rise erectly, supported on stems, about 2 inches high, each flower like a handsome blue Pea. A plant so beautiful and distinct will be very welcome in the rock garden or in a choice border of early flowers. It thrives freely in fine sandy loam, with plenty of peat and leaf mould, in a well drained spot. It is suited for association with the choicest and most diminutive Alpine flowers, and when placed on the rock-work, should be somewhere near the eye, as it is not of a conspicuous order of beauty, nor of a vigorous habit out of doors. I first met with this plant in the Edinburgh Botanic Garden, where it was well grown in pots as a frame plant by Mr. McNab; and so treated, it grows much more freely than in the open air, drooping well down over the edges of pots or baskets, and running about as freely as a soft "Creeper" when planted out in the soil of a cold frame or on a light bed in an orchard house. It has, however, been proved to be quite hardy at Glasnevin.—W.

A Golden-leaved Plant.—The plant we allude to is, like the *Pyrethrum*, one of the Compositæ; but is unlike it, in being of a shrubby character. It is the Golden-leaved *Diplopappus*, *D. chrysophylla*, a hardy, low-growing shrub, which may be popularly described as Heath-like in appearance and foliage, with the exception that the *Diplopappus* looks as though it had been dipped bodily into a solution of gamboge or other rich yellow pigment; in fact, it is the most perfectly gold-coloured plant that has ever come under our notice. It is perennial, perfectly hardy, will strike freely from cuttings, and accommodate itself, we should say, to any requirement, whether an edging or belt of gold to the flower bed, or a veritable obelisk or pillar of gold, should fancy so choose to fashion it. Apart altogether from bedding or flower ground considerations, grown in its natural form as a shrub it is well calculated to arrest attention, and deserves to be brought under notice.—*Irish Farmers' Gazette.*

Culture of the Chrysanthemum.—Although the *Chrysanthemum* receives a good share of attention in most gardens, we rarely meet with what may be termed creditable specimens of it—*i.e.*, plants with good foliage as well as flowers. By the time they come into flower, they are mostly naked for a foot or more above the pot, and, in order to show them off to advantage, other plants have to be set in front of them. To obviate this, strike the cuttings in April, or as soon as they can be obtained, under a hand-light out of doors; and, as soon as they are nicely rooted, plant them carefully on a border previously prepared for their reception, 2½ feet apart every way—a distance which allows them plenty of room, and sunlight free play among them—a condition most essential as regards securing strong sturdily plants. After they have been planted and watered, I give the border a good top-dressing of rotten manure; I prefer this to digging manure in when the ground is prepared for them, as, being surface-rooting plants, they feel the benefit of it almost at once, and it also prevents the soil from cracking or becoming parched. I keep them well stopped until the last week in July, when stopping is discontinued, and all the attention they afterwards receive is an occasional sprinkle overhead in the evening until they are taken up and potted. About the second week in September, or as soon as they show flower, I take them up as carefully as possible, and pot them in rather small pots (large ones being unsightly), using rather a rich compost. They are then placed in a somewhat shady position until they have become

established, when they are fully exposed to sunlight. I need say nothing about training, because that is an easy matter, but the sooner they are prevented from rocking about and becoming broken by the wind the better. Weak manure-water at every watering, is of great service to them, until the flowers begin to expand, when it should be discontinued. We grow a great many *Chrysanthemums* here; and, during the past summer, the advantage of planting them out has been fully proved, obviating, as it does, the labour of watering, shifting, and plunging, which is considerable, when they are grown in pots. My plants, treated in the way just described, are about 2 to 2½ feet in diameter, with ample leafage down to the pots, and some of the Pompones are now literally solid masses of bloom.—J. PREWETT, *Stowe Gardens, Buckingham.*

A WINTER-FLOWERING CLEMATIS.

(*C. CIRRHIOSA*.)

THIS peculiar and valuable plant is too little known and planted. It is quite hardy and vigorous in growth, and bears a profusion of bloom throughout the winter and spring. We first noticed the plant at Glasnevin, and Dr. Moore writes to us:—"I consider it one of the very finest winter-flowering climbing plants that we have in cultiva-



Clematis cirrhosa.

tion. It is half-evergreen, and continues in leaf and flower from the end of November till February." At Glasnevin, the most effective specimen formed a dense isolated mass, but it is well suited for covering walls, bowers, root-work, &c. To encourage its winter-flowering habit, it would in all cases, be desirable to give it a sunny sheltered position.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pansy Miss Maitland.—I am sorry that "A. D." (see p. 359) is dissatisfied with Miss Maitland. I have seen it grown in many different places, and its appearance has ever impressed me that it is one of the finest whites extant. It was raised at Eccles, in Dumfriesshire, by a Mr. Ross, who, when alive, was very proud of this seedling.—J. M. C.

The Tree Medick (*Medicago arborea*).—This plant at first sight reminds one of *Coronilla glauca*, but it has larger foliage of a fresher green colour. It forms a low bushy shrub, and is now flowering on a south wall at Kew. Its flowers are bright orange in colour and very ornamental.

***Yucca draconis*.**—This is a robust broad-leaved species, and is now flowering in the succulent house at Kew. The leaves are broadly sword-shaped, and of a pale green colour—not glaucous, as in most other species. The flowers have rather long petals, and are of a pure white colour and of very ornamental appearance.

Garden Roses and Human Hair.—I have been informed that human hair is now used in the cultivation of Roses. Can any of the readers of THE GARDEN tell me if they have tried it, and, if so, what soil it is the most suitable for.—A. W. [S. R. H. replies that he knows something of the converse of this theory, i.e., of the application of Roses in the cultivation of human hair, having largely used "Rose oil" in his youth, and believing that when Leech's hair-cutter compared the perfume of a Bean-field to "the most delicious 'air oil,'" that particular oil was in his thoughts; he also desires to express his admiration of Roses (not artificial) as ornaments of the hair, and is not at all surprised that she who wore a wreath of them made such a profound impression upon the gentleman, who sang her praises that night when first they met; but he has no experience of the influence of ringlets upon roots (whether ebony locks would darken, or curls, which vulgar little boys call carrotty, would brighten the complexion of the Rose), having only torn his hair, metaphorically, in the Rosarium, when frost or Fungus have destroyed his hopes.]

THE ARBORETUM.

BEST CYPRESSES FOR BRITAIN.

SPECIALISTS are all familiar with applications for information in their particular department. One kind that very often reaches us, and, no doubt, also other editors of gardening periodicals, is for information as to the different kinds of plants that ought to be planted under specified circumstances. One man is making a Rose garden, and wants to know the names of the best twenty-four Roses; another has a similar demand for Ferns; another for Pines, Maples, Cypresses, and so on. What is wanted by one man who takes the trouble to write is, no doubt, desired by a dozen who do not; so we have thought it may be convenient for some of our readers if we reply in our columns to such applications somewhat amply. The following is our reply to a correspondent who consults us as to the best Cypresses:—

Cupressus Lawsoniana.

We think *Cupressus*—or, to speak more definitely, *Chamaecyparis*—*Lawsoniana* the finest introduction belonging to the Cypress group that has ever been made into this country, and, consequently, the finest Cypress that exists in it. We do not say that it is finer in California than the *Wellingtonia* or *Libocedrus decurrens*, or *Cupressus Lambertiana*. We are speaking only of them from the planter's point of view in Britain. We admire it for the beauty of its form and its departure from the strict *Arbor-vitæ* shape into that of a tree, and a tree with a handsome well-defined character. We admire the richness of its foliage; are thankful for the rapidity of its growth; anticipate a fine quality of timber, judging from that of the tree in Oregon; and are charmed with the gaiety of its male flowers and the rich clusters of its small irregularly formed fruit. The character of growth and habit of the tree are constant. See one, see all. You can never mistake it, but its foliage is as inconstant; and if one has a choice in colours (as every one has), it is just as necessary in giving an order for plants that you specify the colour as even the kind of tree you want. A friend of ours who was greatly taken with a beautiful fine-growing *Lawsoniana* of the deepest glaucous green, turned up with silver, inquired its name, and ordered a quantity of plants, determined that his place, too, should rejoice in a like loveliness, but afterwards complained that what he got did not look like the same tree. He had got ordinary light-coloured plants. Therefore, if you want your trees to be deep in colour, glaucous, and silvery, you had better say so in your order, or, better still, pick your plants yourself. Another thing in which one may be disappointed is the colour of the male flower. When the plant was first introduced, it was not known that it had the recommendation of having a showy male flower. As the reader knows, the ordinary colour of the male flower of Cypresses is yellowish-fawn, noways conspicuous and noways remarkable for beauty, but the flower of *Lawsoniana* is brilliant crimson-scarlet, as the colour of a soldier's coat, with a slight shade of crimson in it. It first flowered in this country when Lord Palmerston was paying a visit to Edinburgh. Old Mr. Charles Lawson was then Lord Provost of Edinburgh, and naturally the Prime Minister honoured the chief magistrate by paying a visit to his nurseries. The Lawsons had the first plant of *Lawsoniana* raised in this country; and it so happened that, just at that time, it first put out its scarlet bloom; which pleased Lord Palmerston, who had a fine taste for the beautiful, and delighted Mr. Lawson, as it revealed another excellence in his favourite Cypress; but, as we have just said, this is not to be depended upon. Some years after *C. Lawsoniana* had been described, another species was described by Professor Kellogg, of San Francisco, under the name of *C. fragrans*. It was introduced into this country, and botanists could see no difference between it and *Lawsoniana*. It was said to have fragrance, or, at least, more fragrance than *Lawsoniana*; but no difference, in this respect, was perceptible in this country, and so it rested as a doubtful species until it flowered (in the garden of Mr. Isaac Anderson Henry), when it was found to have a yellow flower instead of a red one. This was pounced upon as a specific character distinguishing the two; but it has not proved to be so. Further experience has since taught us

that the flower differs in colour, as much as the foliage does, in different individuals. From the same seed-bed we get yellow, scarlet, and purple male flowers; so fragrans must be withdrawn as a species. The wood is so fine, that a slab (of the so-called fragrans) was exhibited at San Francisco for its beauty. It is a narrow-growing tree, and so is well adapted for places where room is deficient.

Chamæcyparis obtusa, *pisifera*, &c.

Two or three allies of *Lawsoniana* have been introduced from Japan under the generic name of *Retinospora*. These are all of the same class as *Lawsoniana*. They are very promising; but have not yet made sufficient progress in this country to allow us to place them in the same rank as *Lawsoniana*.

Chamæcyparis nutkænsis.

Another species from the northern parts of north-west America, called *Chamæcyparis nutkænsis*, but better known to horticulturists by the name *Thujopsis borealis*, under which it was generally known at first, stands very near *C. lawsoniana* in beauty and value—many people rank it higher. It shows less variety in the colour of its foliage, and is darker and dingier. The accounts we hear of it from its native country speak of it less favourably than we should expect from its appearance here.

Thuja gigantea.

We have already repeatedly had occasion in these pages to speak of this species in terms of the highest appreciation. For rapidity of growth, it is, probably, even in advance of *Lawsoniana*, and its colour being of a light lively green, contrasts well with it. It is one of the chief *Cypresses* of the future.

Librocedrus decurrens.

If this will only thrive in this country, it may come near to supply the place of *Wellingtonia gigantea*, should the latter prove unsuited to it. They grow in the same forests, and are both giants, surpassing all around; the colour of their bark is the same, the style of buttresses which surround the trunk is the same. The upper part of the trees differ however; *Librocedrus* has its branches disposed all around the stem like the branches of a candelabrum, which is particularly well seen when the tree is dead. The then bare sticks appear standing up all around the stem, like branches of a candlestick. The disposition of the branches in *Wellingtonia* is quite different—short stumpy arms, generally clustered near the top of the tree.

Cupressus macrocarpa.

Those who were familiar with the Royal Horticultural Society's Garden at South Kensington for a few years after its formation, will remember with regret two magnificent plants of *Cupressus macrocarpa* which stood immediately under the terraces, one on each side of the water-fall. These had been brought from Chiswick, and were understood to be the original plants raised from seed sent home to the Horticultural Society by their collector, Mr. Hartweg, in 1847. For a year or two they were one of the chief beauties in the way of plants that were to be seen in the garden. Then they got darker in colour, and less healthy in their appearance; their foliage lost its denseness, the branches got scraggy, and finally they disappeared. It was the town soot that killed them; or at least so enfeebled them that they fell easy victims to the first untoward circumstances with which they had to contend. But these were by no means the only fine specimens of this magnificent tree which, at that time, might be seen in the neighbourhood of London. At Kew there were splendid examples, and everywhere this *Cypress* grew with a luxuriance and a beauty that seemed to indicate that it was perfectly suited to our climate. It had stood with little damage the cold of 1860-61, the severest winter that has been felt by this generation; and yet where are all our fine specimens of it now? Gone—swept away by the winter of 1866. No! not all gone, but nine-tenths at least are gone, and where the sweep came, it was clean. Where they died, they generally went *en masse*. The London district was utterly denuded; so was the south and the east of England. The Midland counties were less severely dealt with, and Scotland and Ireland suffered but little. This was the more remarkable, inasmuch as it is a native of a warmer

climate than even the south of England. The facts connected with the wholesale slaughter of 1866 are difficult of explanation. It has been observed that a plant may stand one severe winter and give way to another not so severe, if it occurs within a few seasons after the first. It is as if the vital energy of the plant had sustained a shock which weakened it and left it less able to withstand another. But six years is a long time, and one would have expected that in it the trees might have had time to recuperate from the effects of the winter of 1860. This is not an unprofitable speculation, for *Cupressus macrocarpa* is a tree which it is the interest of every one to preserve amongst us. It is to *Cypresses* what *Pinus insignis* is to the Pines. Both are distinguished by their fine Grass-green hue, which gives them a freshness and brightness unequalled in any other *Cypress* or Pine. The fine large fruit is well shown in the illustration, although the specimen is a small one. We have seen them nearly twice the size of those figured. The fine slender whip-like shoots of this tree, with their rich red bark, give an attractive elegance to its



Cupressus Lawsoniana.

motion under the breath of the wind. It must not yet be despaired of in Britain; we saw it in great beauty about Edinburgh the other day, and it is to be seen in still greater luxuriance at Castle Kennedy, in Wigtonshire, where a semi-circle of the two varieties, placed in opposition the one to the other, gives every one the opportunity of judging for himself whether they are two species or not. Mr. Fowler, without committing himself to an opinion as to the specific value of the differences, stoutly maintains that whether they be species or varieties, there is a difference by which anyone can refer a plant either to the broad spreading kind or to the taper spire-like form, and there is no disputing the fact that there are two very distinct habits—the one in the line of *Cedrus atlantica*, the other that of the Poplar or *Cupressus torulosa*, which it is impossible to confound in plants belonging to either extreme; but there are often transition plants which it is difficult to refer to one rather than the other, and we observed this even in the group at Castle Kennedy, although it is only right to say that the great majority of plants take either the one habit or the other, and stick to it. In their native country the wide-

spreading kind is the usual form; indeed, we cannot call to mind having seen there any of the fastigate type at all. The



Chamæcyparis (Retinospora) obtusa.

old trees assume some little of the habit of old Cedars of Lebanon, and the young plants are of the broad-spreading fan



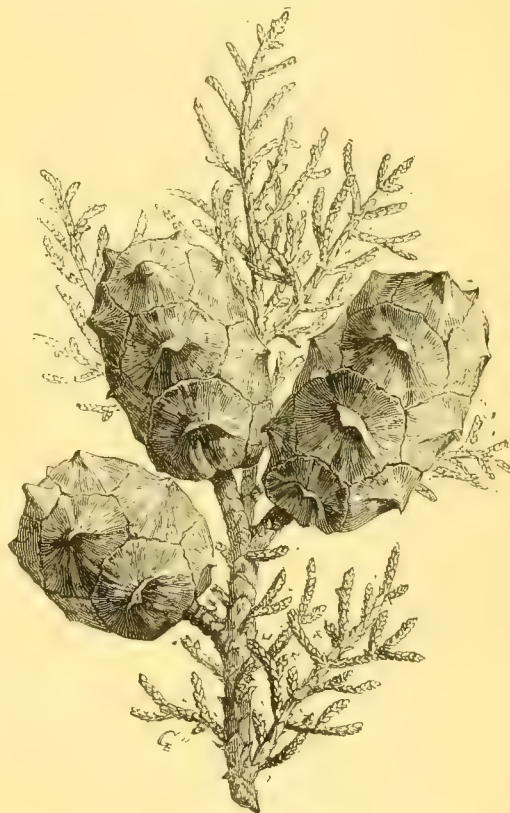
Chamæcyparis nutkensis.

shape, showing that they will, ere long, spread out into the broad type of the older ones. In Oakland, the *rus in urbe* of San

Francisco, they are great favourites; and, during the summer, when for months there is no rain, their fresh green (dusty though it be) agreeably relieves the eye. They are planted in every villa garden, and are generally of the above-named type. Seeing that they have escaped our frosts in some parts, and that they have stood very severe cold in many, and only succumbed generally to one winter which may have had some speciality which may not occur again, we think there is no reason why this tree should not be planted freely for decoration. We should not recommend it for commercial purposes, seeing that there are better Cypresses for such, as *C. Lawsoniana*, on whose fitness for our climate there rests no flaw, but for decoration we cannot dispense with it, even although it should be cut down every ten or twenty years. It is even more beautiful in youth than in age. In such a case all we should say would be, "never mind, plant it again."

Cupressus torulosa.

This is a fine dark steeple-like species from the Himalayas, which would be very well worth cultivating if we could be



Cupressus macrocarpa.

sure that it would bear this climate. There are some fine specimens of considerable age and height growing in the south of England, but, speaking of Britain as a whole, we fear to recommend it.

Thujaopsis dolabrata.

We cannot conclude our list of first-class Cypresses without noting one other, which we believe will hereafter be ranked very high as an ornamental shrub or tree. It is the *Thujaopsis dolabrata*, from Japan, and although it has not been long enough cultivated in this country to allow us to be perfectly sure that it will stand all extremities of our climate, our experience, so far as it has gone, encourages us to hope that it will. We see it growing freely in the north of Scotland, as well as all over England. Its chief defect at present seems to be its slow growth. Our expectation is, that it will grow like the shrub-growing specimens of the Hemlock Spruce, only its leaf is twice or thrice as broad, and the broad decided silver marks

beneath are, of course, much more conspicuous. In Japan it grows to be a tree which is described as of great beauty.

Biota orientalis

Although inferior to those in the preceding list, we must not wholly omit the Chinese *Arbor-vitæ*. It is one type of the Cypress, it is as hard as nails (to use a common expression), and, as a variety in form and colour, is a valuable addition to the others. The American *Arbor-vitæ* (*Thuja occidentalis*) may be ranked along with it as of equal worth. We place neither of them in the first rank of Cypresses, but very far up in the second.

A. M.

THE DIFFERENT KINDS OF CEANOTHUS.

In this country all the varieties of *Ceanothus* are more or less susceptible of injury from frost, particularly when planted as bushes in open shrubberies. They form, however, magnificent wall-plants, standing in most situations quite hardily; and, from their free growth, handsome foliage, and profusion of bloom, produce the finest possible effects. In all the species the individual flowers are exceedingly small; but this is amply compensated for by their being produced in great masses, coming out in succession during the greater part of the summer, which gives these plants a peculiar importance in garden decoration. As wall-shrubs it is necessary, in order to keep them trim and tidy, that they should be at least annually pruned. This should be done in April, or as soon as danger from serious frost is over; and as all the sorts flower on the shoots of the current year's growth, from one to three eyes of the preceding year's wood should be left, reserving, or at most only topping, such shoots as are required for filling up the open spaces on the wall. All the species are of free growth in ordinary garden soil, if dry, with the sub-soil porous; and they will be found to ripen their wood best and flower most freely in warm sunny exposures. The following are very distinct and desirable:—

C. americanus (the New Jersey Tea).—This plant is interesting from the fact that during the War of Independence the Americans used its leaves as a substitute for tea. It is found in great abundance over a wide area in Canada and the United States as a dwarf deciduous bush from 3 to 4 feet high, and has been known in this country since the beginning of the last century. Though one of the hardest of the species, it thrives best when planted against a wall, or at least in a thoroughly-sheltered situation, and in a dry porous soil. The leaves are about 2 inches long, serrated, and of a bright green colour above, and slightly pubescent beneath. The flowers, which come out in succession from about the middle of June till the end of August, are white, and produced most profusely in axillary panicles.

C. azureus (the Blue-flowered *Ceanothus*) is a sub-evergreen shrub, a native of the temperate regions of Mexico, where it grows as a straggling bush about 10 feet in height, and from whence it was first sent to this country in 1818. It is here one of our most ornamental wall shrubs, flowering as it does, from year to year most abundantly, when planted in a dry, well-sheltered, but sunny situation. The leaves are ovate, serrated, deep green above, and hoary beneath. The flowers, which are borne on large axillary panicles, are bright blue, and are in perfection from June till September, and in mild autumns sometimes till November. The variety of it named *Pallidus*, and in some catalogues *intermedius*, is a handsome companion to the species, between which and *C. americanus* it is said to be a cross; it most resembles *azureus*; the chief differences being its harder constitution, larger leaves, and flowers of paler blue; in some cases almost white.

C. rigidus (the Rigid *Ceanothus*) is a sub-evergreen, or in mild winters and sheltered situations an evergreen species, discovered by Hartweg in woods near Monterey in California, and sent to this country in 1848. It has an upright habit of growth, rarely exceeding 6 feet in height, the branches stiff and wiry and, in a young state, covered with down. The leaves are very small and profuse, produced on short foot-stalks of a cuneate retuse form, dark shiny green above and paler beneath. The flowers, produced in clusters on the sides of the young shoots, are of a deep purple colour, and come out in April and May. It is a pretty free-flowering wall shrub, and worthy of a place in every collection.

C. papillosus (the Pimpled *Ceanothus*).—This very pretty species is indigenous to the mountains of Santa Cruz in California, where it forms a densely branched straggling bush of from 6 to 10 feet. It was first introduced in 1848. Like the other species it requires the protection of a wall, on which it blooms very profusely about June and July. The leaves are small, blunt, dark green above, and slightly downy on the under side. The panicles of pale blue flowers are borne on long foot-stalks from the sides of the young shoots.

C. divaricatus (the Spreading *Ceanothus*).—This fine species was introduced about 1841 from Monterey, where, in sheltered valleys, it is found growing as a dense broad evergreen bush of about 10 feet high. With us it is a free-growing handsome wall-plant, the long slender shoots abundantly clothed with small shining green leaves, being in themselves very attractive. The flowers come out in May, and continue till the frost kills them in autumn; they are of a bright blue colour, and are produced very profusely.

C. dentatus (the Toothed *Ceanothus*).—This elegant small-growing evergreen shrub, rarely found higher than about 3 feet, was sent home from Monterey, in 1848. The leaves are very small, deeply-toothed, of a shining green colour, and abundantly set on the branches. The flowers, which appear in May or June, are deep blue, continuing over the greater part of the season; they are very showy and profuse.

C. verrucosus (the Warted-stemmed *Ceanothus*).—This is another Californian species sent home by Hartweg in 1848. It forms a thickly-branched spreading evergreen bush of about 6 feet in height. As a wall-plant with us it is of remarkably free growth, and has a very fine appearance both as regards foliage and bloom. The leaves are small and blunt, of a bright shiny green. The flowers begin to appear early in May, and continue during the summer months; they are borne in corymbs along the whole length of the young branches, often so profusely as to hide the foliage.—*The Gardener*.

Climbing Shrubs.—Of these some attach themselves to the object they environ by rootlets and suckers, like the Ivy and American Creeper, and these demand no assistance from man to keep them in their places. Others require either nailing to walls or tying up against trellises. Masses of rock or heaps of tree stumps, are best covered by such plants as *Clematis*, *Periploca*, &c., which run rapidly over, and clothe them with a gay livery of elegantly-shaped leaves and masses of flowers. But there are several of these rovers that have the faculty of twining round and round the trunks and branches of trees in the same fashion as the Lianes of tropical forests, where huge trees are stifled by the embrace of these semi-parasites, or, as Gilpin has called them, "these boa-constrictors of sylvan life." There the gigantic coils of luxuriant twiners not only begird and enwrap the tree they grow upon, but they extend their exuberant shoots across towards some other tree, and meeting a rival midway, these entwine round each other till the whole forest becomes matted into one tangled mass. Some of these wild forms of vegetable life might, in a modified and sober way, be reproduced in this country. The *Wistaria*, the *Aristolochia*, the *Menispermum*, the *Trochostigma*, the *Akebia*, and a few other twining shrubs, if planted at the foot of trees of moderate girth in some part of a grove devoted to that purpose, would speedily ascend to the highest part of the trees, and thence wander in search of another victim, till the whole grove became a network of mixed foliage. The trees themselves would not be improved by this, and, therefore, some indifferent plantation should be selected for the experiment. But the result would be a very interesting novelty, and we are, at Heatherside, submitting it to a practical test, by trying the plan on a group of young trees about 20 feet high, with trunks about 6 inches in diameter. Deciduous trees are best fitted for this purpose.—*Heatherside Manual*. [The American Vines are admirably suited for this purpose and were so used with capital effect by the late Dr. Lushington at Oakham.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Whitewashed Bramble (*Rubus biflorus*).—How is it once so seldom does this peculiarly beautiful plant in private gardens, or grown in an effective manner? What a rich effect might be obtained by associating it on walls with fresh green Ivy and the scarlet-trimmed *Pyracantha japonica* or the winter *Spiræa*! Its stems are of snowy whiteness, and if grained with green and scarlet, would surely assist in making our gardens more bright and cheerful during the dull days of autumn and winter.—B.

The Catalpa (*C. syriaca*).—There are two other species, *Kämpferi* and *Bursera*, of little merit compared with this, which is a glorious tree, with splendid foliage and abundant flowers in large bunches, resembling at a distance those of the Horse Chestnut. It is surprising that any garden should be without this noble tree. The variety *aurea* has wonderfully perfect golden leaves, that retain their brilliant colour throughout the season. The growth appears as vigorous as in the common kind.—A. MORGREDEN.

A Fine Abies nobilis Uprooted by Wind.—The disastrous gale on the morning of the 21st ult. uprooted a great many trees here, and among them a fine specimen of *Abies* (*Picea*) *nobilis*. This tree was 53 feet 4 inches in height: the girth of the stem, at 1 foot up, was 6 feet 6 inches; at 10 feet up, 4 feet 1 inch; at 20 feet up, 3 feet 8 inches; and at 30 feet up, 2 feet 10 inches. This, if not the largest, was probably as fine a specimen of this Fir as is to be found in Scotland. It was a grafted plant, and was planted about thirty years ago. A good many fine-looking cones were gathered from it early last month, and we have numbers of trees planted in various parts of this estate raised from seed collected from it in former years.—J. RUSSELL, *Pottaloch, Lough Lp. head*.

THE INDOOR GARDEN.

CARLUDOVICA HUMILIS.

This plant belongs to a small group of Screw Pines, contained in the order Pandanaceæ. Some of them have long climbing stems sending out aerial roots, which fasten on the trunks of trees, whilst others have no stems, and form dense low thickets. The genus is confined to tropical south America; and the somewhat Palm-like foliage of these plants forms their most salient distinctive feature. Most of the species form useful subjects as stove plants, but a few of them are sufficiently hardy, it is thought, to endure a lower temperature, even that of an ordinary living room, for a short time, and the experiment might be worth trying. Among those which appear to be of more robust habit than their congeners, may be named the subject of our illustration, *Carludovica humilis*. This is a very compact plant of dwarf growth, with a habit as distinct as possible from the climbing species, though it is furnished with the rudiments of aerial roots. The foliage springs from the apex of a rudimental stem, which is scarcely apparent, and which never rises higher than is shown in the illustration. The fan-like bifurcated and plaited leaves, are developed at the apex of a somewhat long and nearly round stalk, and are of a fine dark green. The flowers, which are incon-



Stemless Screw Pine (*Carludovica humilis*).

spicuous, are monœcious. This plant, like all its near relatives, grows in the deep and moist shades of the dense forests of central America. It has been cultivated since 1857, and was first introduced from the Botanic Garden of Berlin. Judging from the situations in which it appears to flourish in its natural state, the more shaded parts of our Palm stoves would suit it best, beneath some of the higher plants. Bog earth, mixed with a portion of marl to give it substance, and yet allow of the free percolation of water, would probably be the best mixture for growing it in in perfection; and there should, of course, be a considerable depth of drainage material. Thus treated, in handsome tubs, or other vessels of pleasing form, it might become a very decorative plant for large living rooms, or halls and staircases, at all events during the summer and autumn. One great advantage of *Carludovica humilis* for such purposes is, that it does not require to be placed near the light, and so impede the view from the windows, as is the case with plants that require to be near the glass. This grand looking plant, on the contrary, may be placed in any dimly lighted corner or niche, where plants of most other classes would rapidly dwindle and perish. Careful experiments testing the sensitiveness of various plants to the influence of light, or its nearly entire absence might prove exceedingly useful. Many Ferns are found to grow more luxuriantly in the semi-darkness of caves, where they only receive a small amount of reflected light. Other plants are only found in the deepest shade of dense forests, and yet the tops of their foliage are not rendered pale by the absence of light. H. N. H.

FRUITING THE EDIBLE PASSION-FLOWER.

The fruit of the *Passiflora*, like that of the Banana, we only see now and then; but it deserves to be far more extensively cultivated as a dessert fruit than it is. *Passiflora quadrangularis* and *P. edulis* are the two varieties best known and appreciated for their fruit. The first is pretty well known as a handsome free-growing stove climber. *P. edulis* possesses the same habit, but its flowers, though chaste and beautiful, are less striking. *P. quadrangularis* produces fruit about the size of a duck's egg, or larger, when the crop is heavy. When ripe, it is of a dull yellow colour, and has an agreeable smell. That of *P. edulis* is seldom much larger than a pigeon's egg, and is of a purplish colour. The rind of both is thick in proportion to the size of the fruit, and encloses a sac containing the seeds and pulp, which is the eatable portion; the flavour of which is agreeable and refreshing. Both varieties bear excessively under ordinarily favourable conditions, though an impression exists that *P. quadrangularis* is difficult to fruit. All that I can say is, that I know scarcely any plant that bears so readily and so abundantly. Some two or three years ago I procured a newly-rooted plant of it in a 3-inch pot about the month of January, which I grew in a Pine stove. During the season it made something like 200 feet of wood, and set about a hundred fruit all at one time, but only half that number attained maturity, weighing each about $\frac{1}{2}$ lb. or more. This was from a plant not twelve months old from a cutting. What it would have been the second year had the plant had room to extend itself, I would not venture to state; but I doubt not it would have been wonderful. The *Passiflora* is not a plant that requires a house for itself; the roof of a plant stove or the back of a Pinery is the place for it; and in such a position it may be made both useful and ornamental. The conditions necessary to secure a vigorous growth and a heavy crop of fruit are abundance of light and air, restricted root room, and a stove temperature both at top and bottom. A stone box, or a large pot, plunged in the corner of the Pine bed or set near the pipes, where the root temperature can be kept at 85° or 90°, is the place for it. Under any circumstances the box should be plunged, otherwise red spider will be troublesome, though the plant is not liable to insect attacks unless it is starved. Good loam and well-rotted manure of any kind will suit it, and plenty of manure-water should be given when the fruit is swelling, especially when the box gets crammed with roots, which it will in a few weeks after the plants get fairly into growth. The shoots may be trained along the wires, about 6 inches apart, and about a foot from the glass. When as many shoots as are needed to fill the allotted space have been obtained, all others which show themselves should be cut clean out. The secret of fruiting Passion-flowers, consists in allowing each shoot that is left to grow on uninterruptedly during the season without stopping. The flowers show themselves freely along the shoot as it grows, and they must be fertilised artificially as they expand. If the temperature is kept up to 85° or 90° during the day, and from 70° to 75° at night, and care is taken that the plant does not suffer from want of water at the root, any flower will generally set freely, and the fruit will swell quickly to its full size; but it generally takes from two to three months to ripen. So far as my experience goes, neither young nor old plants show flower until they have made a good bit of growth; it is, therefore, important to start the plant early—say about the beginning of January, increasing the temperature as the days lengthen. At this rate a young plant will flower shortly after Midsummer, and onwards; but an old plant that has some wood about it will fruit considerably earlier. The temperature should be kept well up while the fruit is ripening, otherwise it will be indifferent both in appearance and flavour. *P. edulis* requires the same treatment as *quadrangularis*. J. S. W.

CULTURE OF THE OLEANDER.

NERIUM OLEANDER SPLENDENS and its allies are undoubtedly very magnificent objects when well grown and full of flower; and yet how seldom are they seen in a luxuriant condition, or even seen at all in any shape, except in very few of our gardens? while in France, as well as in other countries, they are grown in large numbers, and in great perfection; not only in large tubs to a great size, as we find them at Versailles and at other places, but in a small and portable shape—small plants, fifteen inches high or so, covered with flowers. In a small state the flowers are not so large as when grown in a planted-out manner, or cultivated in large pots; nevertheless they are very handsome, and last a long while in bloom in healthy rooms or balconies, provided care in watering with tepid water, and washing overhead, occasionally, be persevered in. The Oleander, like every other plant, comparatively speaking, is easily grown and flowered when one knows how. Therefore a few brief instructions to those who do not know how, may be acceptable

The propagation of this very showy plant may be effected in this wise. At this season of the year, when growth is matured, select cuttings 8 or 10 inches in length; insert each in a small bottle of water, with a pinch of wood-charcoal in each bottle, and place the bottles in a warm house, such as a plant-stove, or any other place, where the heat is not less than 60° or 70°. In a month or six weeks these will be rooted, when they may be potted in as small pots as possible, without injuring the roots, using loam and river sand in equal proportions; but they do not seem particular as to soil, provided it is wholesome, and the pots are well drained. If kept in a warmish place, with moisture in the atmosphere, they soon get established in their second progressive state. In early spring, as the days lengthen and growth commences, give them more moisture and heat, and towards April they may be shifted into a size larger pot. By no means give them too large a shift. A lively heat and an abundance of moisture will be all they need till they show signs of flowering, which they will do about August. The admission of plenty of air, and partially withholding water for a month at this period will be a rest to them; they may then be put into a warm moist heat as before, and their flowers will open in abundance in October, and on to Christmas. Some, of course, will not show signs of flowering the first season; these may continue on in a cool resting temperature during the winter, when in early spring they may be started into growth; and these will mature their shoots and flower in summer and early autumn. It must be borne in mind that the Oleander requires a liberal supply of moisture, both at root and branch, when growing; and, on the other hand, it must not get into a stagnant state, so that caution must be exercised in giving a very liberal drainage in all cases. In a planted-out state the Oleander makes a splendid bush, and throws out great shoots 4 or 5 feet long, which throw splendid trusses of bloom, some of the individual flowers measuring 4 inches in diameter. Of course the Oleander requires no shade, and every ray of sun must be given to the plants at all times. The variegated-leaved form is very pretty, but its flowers are not nearly so fine as those of the green kinds; this does not strike well, and it is better grafted on the green. There seem to be only two or three kinds known in this country to any extent, and it is pleasing to learn that the Messrs. E. G. Henderson and Son have some beautiful single varieties, with large improved flowers, which may prove great acquisitions to the flower-forcing gardener. The white one will be a valuable addition; and, though not new, Messrs. Henderson deserve universal thanks for bringing it before the public.—*Florist*. [The yellow-flowered variety, also, should not be lost sight of.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Pittosporums.—I have the old-fashioned *P. Tobira*, now a much neglected plant; but I hear there are others equally handsome. Can you name one or two, and say in what soil they succeed best.—*CLARA*. [The common species is *P. Tobira*; but we occasionally meet with *P. japonicum*, which has larger flowers, and handsome glossy foliage. All the species are suitable for indoor culture. They do well in a mixture of peat and loam, and require no care except to be regularly watered and to be kept clean.]

Fourcroyas.—Two or three species of *Fourcroya* are now in bloom in the succulent-house at Kew. In general appearance and habit they closely resemble American Aloes or Agaves, while their large white flowers remind one of those of the Yuccas, the stamens being inserted in a similar manner, and rarely protruding beyond the tube or floral segments, as is the case in the Agaves. A striking peculiarity exhibited by these plants is the production of little bulbs on the flower-spikes in place of seed-vessels, while the plants do not generally evince a tendency to throw up suckers or off-sets so freely as the Agaves.—*B.*

Gesneras.—Many of these dwindle away with me after flowering, and sometimes die outright. How can I prevent this?—*S., Brixton*. [To keep them in good health, they must be well attended to after flowering, for then the bulbs for the following season have to be matured. In order to effect this, they should be carefully tended, giving them occasional waterings with weak liquid manure; but as the foliage begins to decay, less water will be required, and when the growth is finished, it must be entirely withheld. After this, though requiring to be kept dry, they must not be baked, but should be stored away in their pots in a dry place free from frost until again required. It is a common practice to shake the soil away from them when dry, and to store the bulbs in dry sand; but we believe the best system is to leave them in their pots, and just start them into growth in the old soil before re-potting, for by this treatment the bulbs are not so liable to injury as they otherwise would be.]

Acacia lophantha, Melianthus major, and other Indoor Decorative Plants.—I can fully endorse all that "A. B. N." says (see p. 380) as to the value of *Acacia lophantha* for indoor decorative purposes. Seed of it sown in autumn will, if well grown, produce fine strong plants by the following autumn. Plants from spring-sown seed will, of course, be smaller, but, for certain purposes, better than those raised from autumn-sown seed. They should be plunged in a bed of ashes in the open air during the summer and early autumn months, care being taken that they are not crowded, or they lose their lower leaves, and, with them, half their beauty. Another plant of first-rate excellence for decoration, and as easily grown as the above, is *Melianthus major*. It should be sown in March and started in heat, and from June onwards treated like the *Acacia*. There are few handsomer plants than the *Melianthus*. Its unusual colour and finely-formed leaf and free graceful growth always attract attention, and it is one of those plants which everybody admires. *Capsicum Prince of Wales and Yellow Gem* are also very pretty for autumn and winter decoration. They retain their bright yellow berries for a long time, and well repay any little attention which their growth requires.—*E. B.*

ARTIFICIAL ROCK-WORK AT OATLANDS PARK.

Rock-work, as a picturesque feature in garden scenery, is often attempted, but seldom with complete success. I am not alluding to decorations of this kind put unskilfully together, as they generally are in the small gardens of suburban villas, but to such rock-work as it is pretended shall have the appearance of being a natural outcrop of the rock formation of the district. There are two very distinct modes of producing the effect of natural rocks, both of which require the exercise of considerable artistic taste, as well as much practical skill. The one is by excavation, and by that means of exposing the face of rocks previously hidden beneath the surface; and the other by building up, with suitable materials brought from a distance, and in that way forming masses of rock having a natural aspect. Of these the most obvious and least expensive method (should external appearances indicate the presence of rock at no great depth from the surface) is to excavate, and so lay bare the natural rocks. I have seen several gardens of from 5 to 20 or 30 acres in which this system has been practised with more or less success. The favourable lie of the ground, or otherwise, is always an important matter in cases of excavation. One or two rocky valleys thus excavated that have come under my notice, have looked much more like Nature's own production, than that of the pick and spade. I have, too, seen places in which the natural conditions presented admirable facilities for carrying out the creation of such a scene by excavation, but which, from a tasteless spottiness in the management (or, rather, mismanagement), were worse than failures. I say, advisedly, worse than failures; because the place, which was naturally pretty, with soft green slopes, plenty of trees, and a glimpse of sparkling water, had been dug into meaningless ugly holes. I have also seen both noble and ignoble specimens of built up rock-work. Without amply sufficient space it is difficult to produce a natural and broadly artistic effect. I have, however, met with specimens of this kind of garden landscape-work in which, although both space and materials have been limited, the effect has been all that could be desired. I have also seen such work, on a gigantic scale, where the result has been lamentably bad. In the grounds of Mr. Hewitson, at Oatlands Park, a piece of rock-work has been built, in which Nature has been imitated with such complete success as to wholly exclude all traces of art. The undulations of the ground, the turfy slopes of which become exceedingly steep as they approach the lake, presented, it must be confessed, unusually favourable points for an apparent outcrop of rock; and of these the very fullest advantage has been taken, and with consummate taste. The beautiful grounds in which these effects of rock-work have been so artistically simulated, form part of the once royal park of Oatlands, some 30 or 40 acres of which Mr. Hewitson was so fortunate as to secure, at what would now be deemed an almost nominal price. The powers "that were" decided, in their collective wisdom, to sell the fine old park, piecemeal, by auction, to the highest bidders, in order to save the expense of keeping it up; its noble historic trees being valued to the purchasers at common timber price, by carpenters' measurement. Among those trees are some Cedars, which must rank among the grandest and most picturesque in the land; and there are several gigantic Oaks, the ages of which must be calculated by centuries. These truly colossal trees, produce the grandest kind of landscape effects, and, combined with the picturesque dips and rises of the ground, furnished Mr. Hewitson with material for the formation of one of the most exquisite stretches of pleasure garden to be found within thirty miles of London; and he has not neglected his opportunity. Of dips and slopes there were abundance, and also water; but the soft undulating surface lines, here and there wanted crispness and emphasis to complete the picture, and the rock-work, destined to supply the deficiency, was constructed, under the supervision of the proprietor, by Mr. Marshall, of Liverpool, who has utilised the materials confided to him with great ability. These "materials," so to speak (namely, the pieces of stone with which the pseudo-natural rocks had to be built up), were the weather-worn stones resulting from the demolition of old Kew bridge, which, in their new position, with the worn portions skilfully turned to the front in the formation of simulated natural rock, produce the happiest



ARTIFICIAL ROCK-WORK IN OATLANDS PARK.

possible effect; and thus the rocky faces of the ravines excavated near the lake, and into which the water of the lake has been conducted, appear to be as natural as if Nature herself had provided them. The sowing of Foxgloves and Stachyses on the rugged portion of these banks, and the planting of Aquatic Irises on the edges of the water, impart wonderful naturalness to the scene—in which Furze, Bilberry, Heather, and other plants of wild original growth have been allowed to remain undisturbed, with the best possible results; while the common Bramble plays a conspicuous part in completing the natural aspect of the scene. These Brambles are allowed to trail far and wide, stretching in many places their far-reaching growth over the mown turf; and Mr. Hewitson has oftentimes desperate struggles with his garden assistants and labourers, to prevent them from lopping off these impediments to the action of the scythe, which, in some cases, is still preferred to the mowing machine. As a whole, these grounds are a perfect model of landscape composition, and are well worth a visit from every lover of the beautiful in garden scenery.

H. N. H.

THE VITALITY OF SEEDS.

A BRIEF report—taken from one of our local papers—of a lecture, delivered by me at our Philosophical Society, on seeds, which appeared at page 386 of THE GARDEN, contains a slight mistake, which I should like to have corrected. In the latter part of the paragraph I am made to state that, "To retain vitality in seeds four things are required, namely, moisture, heat, air, and electricity," whereas it ought to have been, that these requirements were necessary to stimulate the embryo into vital activity. When confined to our local papers I scarcely considered it necessary to make the correction, but, when quoted by you, I am sure you will permit me to set the matter right. The more so, as I purpose making it a text whereon to offer a few remarks of a more technical and extended character than would have been justifiable in one of our Saturday afternoon lectures at the museum, having a direct bearing on the capacity of seeds to retain intact the vital principle through an almost unlimited period of time. Before doing so, it may not, however, be out of place if I say a few words on the value of a movement inaugurated by our Philosophical Society, about a twelvemonth ago, of opening, at a mere nominal charge, their museum to the public on Saturday afternoons, and associating therewith a popular conversational lecture upon some one of those various branches of science of which illustrative specimens are found in the cases. The Saturday half-holiday now so general amongst the "working classes"—or what might be more appropriately termed the "wage classes"—and the more general recognition of the various branches of science, in connection with the education movement throughout the country, appear to my mind to call for a similar movement on the part of every institution that possesses a museum or other means of popular instruction. A few of our large provincial museums are continuously open to the public. To those I would suggest the additional attraction and enhanced value, from an educational point of view, which would attend the delivery of a series of lectures, and for which no more fitting occasion can be selected than the Saturday afternoon. The seeds of scientific knowledge thus sown are sure to find in some of the hearers all the essentials necessary for their future development; and the grain thus scattered will, without doubt, return in some shape or way, with bounteous increase, its harvest contribution to the national store-house of knowledge. But to my subject—seeds and their power of retaining their vitality when embedded deep in the bosom of mother earth. Few observers of Nature but must have met with instances where the correctness of the above statement is fully confirmed. In my younger days, when I had more leisure for botanising than I have now, nothing used to please me better than to come across a new made railway cutting or a quarry or gravel pit, where, in the newly disturbed sub-strata, there is almost sure to be found some plant or other that is, if not always new to the locality, at least but rarely met with. One or two marked instances I may specially mention. Many years ago a new siding was being made on the Great Western line, the soil for which was removed from a cutting some 30 feet deep and about six miles distant therefrom. On this siding I observed a Composite plant of an aspect sufficiently distinct to induce me to get out at the station and retrace my steps, when, to my surprise, I found an abundance of *Borkhausia fetida*, a plant of rare occurrence and unknown in the locality—confined entirely to the recently-introduced soil. My next object was to learn the source from whence the soil was obtained; and there in truth was the plant again growing profusely, but

confined to one side of the line only, that from which the soil had been recently removed; the long sloping bank opposite did not present a single specimen of it for at least a mile, which was as far as daylight permitted my investigation to extend. That these seeds came from the fresh upturned marly clay soil was fully confirmed by a nice crop of plants I raised from a portion of the soil I took home with me. Another instance of more recent date occurred in the cutting between Bridlington and Scarborough, where *Iberis amara*—our British Candytuft—was developed in abundance, both in the cutting itself and on the embankments formed of the soil removed therefrom, and where it holds vigorous possession to the present day. This plant was, I believe, thus restored to the Yorkshire flora. Still more recently, as the result of an embankment made from a cutting about 18 feet deep, the following season I found a considerable sprinkling of *Delphinium Consolida*, a plant quite foreign to the locality, and one whose indigenous character is doubted by many. Two or three other plants of minor interest occurred that were also new to the neighbourhood. A further illustration, that has a similar bearing on the matter, may be noted. A pond of considerable size in this neighbourhood, that has been dry for two years owing to a general lowering of the springs, has been covered this season with an abundant crop of a species of *Chenopodium*, which, though not absolutely absent in this part of Yorkshire, is of exceedingly rare occurrence. The foregoing are all from my own observation, and I find recorded in this week's *Athenaeum*, amongst "Physical Notes," a valuable corroborative testimony from Professor Von Heldreich, of Athens, who states that on the removal of the mass of slag accumulated in working the Laurium Mines, some 1,500 years ago, which is now being worked over again for the sake of the metal it still contains, quantities of a species of *Glauclium* or Horn Poppy, has made its appearance, and, what is more, it proves to be a new and undescribed species, to which the name *Glauclium Serpieri* has been given. In the former instances no idea can be formed as to the probable length of time the seeds thus disinterred and revived have lain in their dormant state; but, in the latter, tolerably well authenticated history carries the date of the super-imposed heap of refuse to between 1,500 and 2,000 years ago. Doubtless the absence of air, an equable and unvarying condition as regards moisture and temperature, and, above all, the complete neutralisation of the physical influence of the sunlight, whether in its electric or actinic character, or in both combined, caused by the distant removal of the seeds from the surface—appear to constitute the means by which Nature exercises a preservative power in seeds as astounding as it is interesting. I may further state that from my experience, with but one exception, that of the Candytuft, these resurrection plants—if I may use the term—are but short-lived in their new localities, and rapidly succumb to the more vigorous vegetation, which may possibly have been absent in the past, but has become developed in the present, as a result of those terrestrial mutations that are in continuous progress in Nature; and, as a matter of course, are more intensified where Art and civilisation have contributed their special quota of disturbing influences.

JAMES C. NIVEN.

Hull Botanic Gardens.

A FLOWER MISSION.

FIVE or six years ago a young girl, at that time a teacher, noticed in her daily rambles the great waste of fruit, and especially of flowers, in the gardens of the wealthy. Myriads of blossoms that might gladden sad hearts and tired eyes, are allowed to fade through the long summer days, sometimes because their owners are absent abroad; oftener still because of the super-abundance resulting from liberal culture. Each week our thoughtful girl came into the great city, always bringing with her a basket or a bouquet of fresh flowers, sure, even on her way from the station to her home, to be asked for flowers by a score or more of little children, ragged, yet with the love of the beautiful in their hearts. The summer passed away, but not the happy thought born of the summer. In the city are vast numbers of poor suffering souls, not alone in hospitals and on sick beds in narrow, straitened homes, but hundreds of sewing girls spending their lives in hot stifling work rooms in the heavy woollen manufactures, for fall and winter trade. Where is their summer? What do they know of Nature's gracious bounty in field and wood, on hill and glade? On the one hand the need, on the other the demand, and its possible fulfilment. Not only in the fields and woods, ready for the harvest, but also in the conservatories and greenhouses, and gaily blooming flower beds of the suburban gardens environing the great metropolis, are countless superfluous blossoms that were not born to blush unseen, and should not waste their sweetness on the desert air. The first Sunday in May, 1869, in several of the city churches a brief notice was read, inviting all having either fruit or flowers to spare, or

time to gather wild ones from the woods, to send their gifts to the chapel of Hollis Street Church, which would be open on Monday and Thursday mornings from eight till twelve for the reception and distribution of flowers and fruit to the sick and poor in the city. Any and all who might have leisure and inclination to assist in tying up bouquets, or in carrying them to their destination, were invited to meet at the chapel on that Monday morning; a curious example of an organisation almost self-created; entirely composed of volunteers; no membership or qualification for membership other than the desire to lend a helping hand; no president, no official red tape: each did that which seemed right and fitting, and in keeping with the beauty and fragrance which, week after week through the long summer, made the old chapel blossom like the Rose. We quote a few words from an account of that first day's experiment: "The first to come were two girls, who, glowing with the air of their country homes, and excitement from the thought of the pleasure they had the means of giving, appeared with baskets filled with *Houstonias*, *Cowslips*, *Violets*, and *Anemones*, nicely tied up in pretty bunches; then two more, with baskets full of *Violets*; and again another with field flowers. So far all were personal friends; the next contribution, however, was from a stranger—hot-house flowers, and ripe red *Strawberries*. Again a silver wedding gift, of twelve beautiful bouquets, seeming to the donors the pleasantest memorial they could convey of their own happiness. Again a Lady Bountiful sent her carriage laden with cut flowers, pot plants, and branches of flowering shrubs, placing her carriage also at the service of the members—a welcome gift indeed, for it is no light task to carry the large, flat, flower-laden baskets to their destination." This was a good beginning for such a quiet, unostentatious charity: contributions from thirteen sources; distributions to 150 persons. The work begun under such favourable auspices never flagged throughout the summer. The givers were liberal; the workers also. School children in the surrounding towns made excursions to woods and fields, and sent in generous collections of wild flowers, Mosses, and graceful Ferns. Regular contributions were also sent from private conservatories, sometimes carefully and tastefully arranged in little bouquets ready for distribution, sometimes in huge bunches of individual flowers, easily separated; sometimes a large basket held many varieties of flowers in layers, with moist cotton between; the flowers having been sorted in the gathering, the *Pinks*, the *Roses*, the *Heliotropes*, &c., which rendered the work at the chapel much simpler, and lessened greatly the risk of breaking the stems, always to be feared in separating indiscriminate masses. The essentials for work in the chapel were a long table, broad enough to turn the flowers out in heaps, with room for assorting; shallow tanks of water in which to place the bouquets as fast as prepared until the hour of distribution; plenty of string, and scissors, and chairs. It is unwise to attempt to work standing; the fatigue is great, and should be lessened as much as possible. Large flat baskets, like market baskets, are the most convenient for carrying the flowers without injury. It seemed as though everyone had been waiting for just this chance; for not alone were the flowers provided, and busy, willing hands to arrange and distribute them, but corporations (supposed to be soulless) became liberal and generous to an unwonted degree. Railroads transported free of expense, the baskets and parcels for the Flower Mission; not only over the roads, but always finding among the *employés* at the stations some one to carry them to the chapel. If the baskets were marked with the owner's name and residence they were returned also by the next train free of charge. Many a basket twice a week made its journey to and fro in this way from Dedham, Newton, Wellesley, Hingham, Lexington, and even as far as Plymouth. From Quincey twice a week came two or three huge wash-tubs full of garden flowers and wild flowers. In the gathering every one united, Catholic and Protestant, orthodox and Unitarian, all for the love of God and His children. We copy a few statistics from the report of the ladies connected with the Flower Mission at the close of the first season, in October, 1869:—

Contributions in flowers	356	Number of towns sending contri-	
" in plants	30	butions	28
" in fruit	30	Number of bouquets distributed.,	6,718
Number of contributors	106		

Of these 1,132 were sent to people confined to the city during the warm weather. The plants were scattered among various homes. The remainder of the flowers were taken to the hospitals and asylums, and sometimes to the gaol and State prison. In the spring of 1870 the ladies of Cambridge proposed to co-operate with the Hollis Street Chapel by establishing a branch mission for the distribution of surplus fruits and flowers in their vicinity. In 1871 Chelsea followed suit. Thus the country was brought to the city—close to thousands who are never permitted to "go a-Maying," or to look upon the full glory of summer time. During the second year of the mission the contributions, and consequently the distributions, were more than doubled. Over 11,000 bouquets were distributed, besides 1,800 pond Lilies, chiefly from one

friend. These last wrought a "special work of grace" among the denizens of the North End, to quote the words of the resident missionary in that apparently godless region. There were men, and women too, whose hearts seemed like nether millstones, impervious to all good influences, baffling every attempt at sympathy or enlightenment, to whom the sight and smell of the water Lilies brought tender memories of childhood perhaps, when, young and innocent, they too had gathered the pure white blossoms. The Lily brought to them its message of beauty, grace, and sweetness, rising above the waters, reaching heavenward even from the black oozy depths below. Who shall say that some human heart to-day is not purer for the silent lesson of those Water Lilies? Beauty, the gift of the All-Beautiful as well as the All-Bountiful, is an evangel for ever to human hearts. Surely they need it most whose lives are rendered the most unlovely by sin and misery. It would be pleasant to give the name and the portrait of the Pansy Man; but the modesty and reticence which so long kept him unknown, save by the sobriquet earned by his lavish gifts, forbid. Literally by thousands were they brought, royal in purple and gold, and every rich strange tint born of hybrid culture. About twenty hospitals and infirmaries were supplied week by week; and many touching incidents might be related in connection with them. It was odd to see the various preferences shown in the hospitals. The men would oftentimes choose bunches of fragrant border *Pinks*; the women almost always wanted *Roses*; if country bred, wild flowers were the most eagerly sought. In the work-rooms, garden *Roses*, sprigs of trailing *Arbutus*, sweet *Honeysuckle*, or boughs of pink-tinted *Apple blossoms*. As the weeks wore away, and a kind of intimacy grew up between givers and receivers, special cases were remembered in the making of the little bouquets: to the blind girl always as many fragrant flowers as possible; the consumptive, in the clean white hospital bed, welcomed the scarlet *Geraniums*, which lent a bit of warm bright colour to the prevailing white of the wards; one young sewing girl always begged for Lilies of the Valley—it seemed easier, she said, to sow the long white seam with the delicate white flowers keeping her company. The report of the physicians connected with the hospitals is most encouraging. They say it is a great aid to convalescence when the patients have something to divert their thoughts from their own suffering, and nothing answers that purpose so well as the fresh beauty and fragrance of flowers. In Chelsea many of the physicians send in lists of special cases in their practice where such gifts would be particularly beneficial: oftentimes they say the fruit sent is the best of agents in hastening recovery. Among the pleasant records of the mission are the visits to the Bennett Street Dispensary, where many poor sick people go for advice and medicines—often 200 patients in the course of the day, each waiting their turn, and weary waiting it is. The surprise and delight manifested when the flowers are distributed among them must be seen to be appreciated. Many touching letters have been received from hospital patients and from the work-rooms. A brief extract from one of the latter is given:—"I think our Heavenly Father must have put it into some sympathising Christian heart to thus remember the toiling ones. We who are shut up from morning till night, and see but little of Nature's beauties. I, for one, very deeply appreciate the gift of flowers. As I looked at them I thought, 'What is the message they have brought me?' Something within me seemed to say, 'To comfort you, to whisper hope whenever your faith grows dim!' Christ must have loved flowers, for He gave a lesson to His disciples, 'Consider the Lilies.' I have been considering them all the afternoon. These flowers shall fade, but the Great Master speaketh to me, and saith, 'Go, say kind words and do kind deeds to your fellow men, and cause beautiful flowers and love and trust in God's goodness to grow up and blossom in their dreary pathway, and remember that whatsoever ye do unto the least of these My brethren, ye do it unto Me. . . . I thank the mission for the flowers. They did me a world of good, turning my thoughts from the daily drudgery of life to something nobler and better. With the gratitude of a weary, toiling sister." One thing of special note in connection with this Flower Mission is that none having put their hand to the plough seem to look back or loose their hold. Sooner or later we trust every town and city, every country village, will have its Flower Mission.—*Harper's New Monthly*.

Water-edge Plantations.—Unless in the case of very large pieces of water, where there is plenty of room for occasional clumps of trees, or where shade is an important object, plant sparingly near the water's edge. Nothing is gloomier or more depressing than a piece of water nearly surrounded by large trees which intercept the sunshine, and whose dark shade is reflected back from the water. A pool of moderate extent, with a few pendulous trees, and still fewer tall trees, sparsely scattered along its edges, leaving ample room for a broad expanse to freely admit the sun's rays to play upon its surface, is a beautiful object.—A. MONGREDIEN.

GARDEN STRUCTURES.

ICE-HOUSE AND COOL-CHAMBER.

The principal requisites for an ice-house with a cool-chamber below it for milk or fruit are, a locality where the ice can be conveniently placed in the upper part, and where there is drainage to carry off the waste from the ice. A hill-side is the most convenient position for such a house. The method of construction is the same as for any other ice-house, excepting in the floor. The walls are double, and are filled in between them with sawdust or other non-conducting material. The roof should be wide in the eaves so as to shade the walls as much as possible, and it will be found convenient to have a porch around the building, on a level with the floor of the ice-house. The floor of the ice-house must be made not only water-tight but air-tight. If a current of air can by any means be esta-

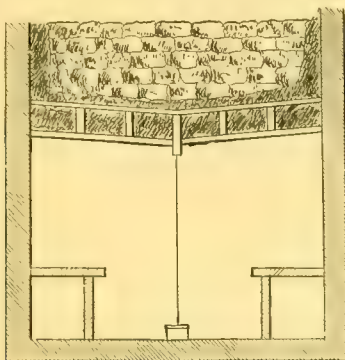


Fig. 1. Interior of Cool-chamber.

blished through the floor of the house, the ice will melt away in a very short time. A double floor of match-boards, tarred at the joints and between the floors, should be laid. The joists are placed so that the floor slopes from both sides to the centre, to collect the waste water from the ice; a channel is made along the centre to carry it to the side of the building, where it is made to pass off by means of a pipe with an S curve in it, to prevent access of air. Or the pipe may be brought down through the lower chamber and made to

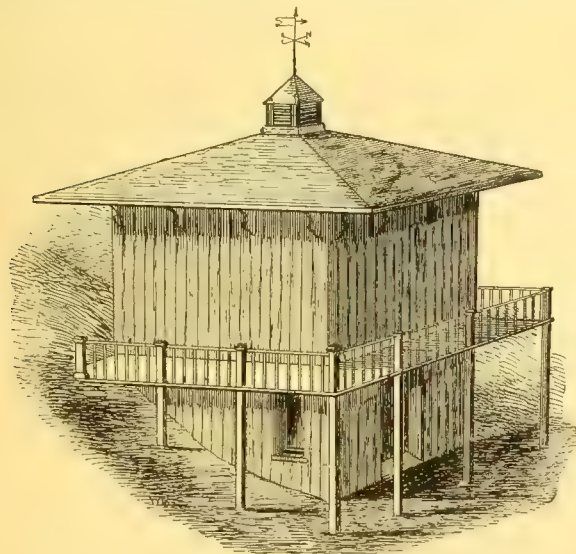


Fig. 2. Exterior of Ice-house.

discharge into a cistern, in which the water is kept always a few inches above the level at which it is discharged from the pipe. The method of this arrangement of the floor is shown at fig. 1, which represents a section through the floor and lower chamber, in which the shelves are seen. Fig. 3 shows the patented arrangement of Mr. Rankin, of Denison, Texas, and Emporia, Kansas, which he has adapted to the refrigerator cars, in which fresh beef is brought from Texas to the Eastern markets. Although this is patented, Mr. Rankin makes no charge for the use of it, except the nominal one of

one dollar for each ice-house, and it is therefore practically public property. The ceiling of the lower chamber is made to slope, as shown in fig. 3, and may be covered with sheet zinc. Above the ceiling there is the usual non-conducting layer, and a floor sustained by the usual joists, upon which the ice is packed. The coldness of the ceiling causes the moisture of the lower room to condense upon

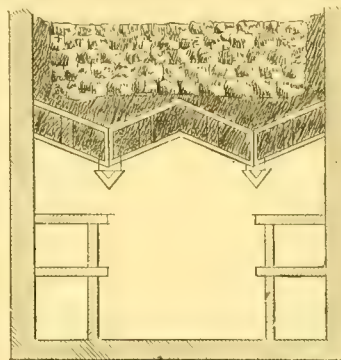


Fig. 3. Mr. Rankin's Cool-room.

it. This moisture runs down the slope, and drops into troughs or gutters of zinc, which are suspended beneath it. From these it is carried off into the cistern, which collects the waste water from the ice above. Such cool chambers as either of these may be used to preserve fruit, meat, vegetables, or other perishable substances. Some ventilation and circulation of air in them is necessary to prevent mould or mildew, and it would be preferable to build the lower story of brick or stone rather than of wood. The upper part of the building could be built of wood as well as of any other material. A temperature of 40° has been maintained in such a chamber throughout the summer, but this can only be done where the soil is very dry and gravelly. The elevation of the building is shown in fig. 2.

WOODEN CURVILINEAR CONSERVATORIES.

MESSES. FLETCHER, LOWNDES, & Co., who object (see p. 415) to wooden curvilinear conservatories, are, I believe, manufacturers of curved conservatories in iron, and therefore can hardly be considered to be disinterested parties. They state that a wooden conservatory was erected in Birmingham in 1872 by a well-known firm, which proved a failure; but of this house I know nothing, having neither seen it nor heard of it; but, admitting that such a failure did occur, it proves nothing against my house erected at Croydon. Your correspondents are evidently unacquainted with my houses, for they go on to speak of the objections to be urged against tie-rods, trusses, and iron columns, from all of which my houses are free. The house erected by me for Mr. Ley is 52 feet long and 22 feet wide, without reckoning the porch, which is 21 feet high to lower side of lantern, and 42 feet high over all. The curved bars are 12 feet long, and only 3 by 1½ inches in section. The inside space is quite clear—no cross-ties, columns, or wooden trusses whatever. The lantern and tower are carried entirely by the bars, and I am quite sure that Mr. Ley will be pleased to show it to anyone who may desire to inspect it. But, it may be asked, how long will such a house last? Well, to that question, I think I can give at least a partially satisfactory answer. I erected a house in the Royal Horticultural Society's Gardens in 1871, the bars in which were bent on my patent principle; it has only just been taken down, and I am now re-erecting it. Now, although this house had been nearly four years in existence, not a single square of glass in the roof has been broken, or even cracked, although the house is without ties, columns, or wooden trusses, and the glass is bent, and every one knows how brittle bent glass is. I make no claim as regards novelty in using straight glass on bent bars; I believe it is a hundred years old, and I have no doubt that plenty of your readers have old conservatories glazed on that principle. The roof of the office in which I am writing is glazed in that manner, but it is only done for cheapness, and it lacks that full and round appearance, which bent glass alone can give; the only point to be considered is, whether the extra appearance is worth the extra cost. Mr. Baines, I see, deprecates the use of yellow pine for houses. I never saw or heard of yellow pine being used in that way; it is a Canadian wood and the most expensive deal we have. He advocates red deal, or yellow deal as it is called in London; this is a Baltic wood, and I think he will find that it is the wood which all horticultural builders use; I know of no exception, and this is the wood of

which old houses, as far as I have seen, are all made. The main cause of decay in houses is unseasoned wood. If wood, when painted, is damp in the centre, the moisture, being sealed in by the paint, soon produces decay. Houses built with heavy timbers are more liable to decay than lighter houses, as the chances of thorough seasoning are in favour of the smaller wood. Mr. Baines's praise of iron houses rather surprises me; for if there is one subject on which I have found all gardeners to agree, it is their condemnation of iron houses; even Messrs. Fletcher, Lowndes, & Co., who are iron-house builders, say: "We are no advocates for iron in the construction of horticultural buildings."

W. LASCELLES.

Bunhill Row, Finsbury.

THE FRUIT GARDEN.

CULTURE OF THE RASPBERRY.

THE Raspberry is a moisture-loving plant, found wild plentifully in the northern counties in moist and shady places on the outskirts of woods associated with Foxgloves and certain varieties of the Dog Rose, a circumstance which furnishes a clue to its cultivation. The best plantation of Raspberries we ever remember to have seen, occupied a low-lying quarter somewhat shaded by large trees, which grew at some little distance off; the soil was a deep moist very sandy loam resting on pure sand. The canes were extremely luxuriant, running up straight and strong. Such a situation should always be chosen, if possible for Raspberries. A north border answers very well in the south, but is too shady in the north. The space behind north walls, however, is too limited and valuable for summer crops to be devoted to Raspberries. Where there is no choice, the best must be made of any open quarter at command; and much can be effected by means of good management. The first consideration is well-trenching the soil to the depth of 2 feet at least; for although the Raspberry is a shallow-rooting plant, yet deep trenching is advisable in order to aerate the ground and make the surface sweet. If the land is at all heavy, a liberal dressing must be given of any material which will have the effect of lightening it—such as lime-rubbish, burnt clay, sand, leaf mould. We have used sifted coal-ashes, mixed with manure bountifully, on heavy clay with the best effect; and with annual top-dressings of the same, the roots will soon abandon the clay and spread themselves among the top-dressing like a mat. Though the Raspberry will make very luxuriant growth under favourable circumstances, we do not think it advisable, as with other fruits, to give it much room; planting in rows 4 feet apart each way will be sufficient. The roots do not wander far from the plants, which, when close, shade the soil and protect them from the heat of the sun; and the annual top-dressing maintains its vigour better than when the plants are allowed more room. We annually wheel in amongst our Raspberries, and other small bush fruits, unlimited quantities of short Grass from the machine-mowings of lawns; it shades and keeps the soil moist, prevents the growth of weeds—for it must be remembered that this Grass contains no seeds of weeds—and finally it is dug into the ground with more manure in winter. Various plans are adopted for the support of Raspberry canes; but the best which we have tried is training them in the form of fans to wires, stretched along the rows espalier fashion, from posts at either end, the fruiting canes being trained right and left, leaving the centre over the stools open so as to afford room for the young canes in summer. Arching the canes rainbow fashion and tying the tops together is another mode of training often practised, and it has the advantage of not requiring any stakes; but it gives birds great facilities for getting at the ripe fruit, and bundling the canes together is always objectionable. Tying the canes in bundles to upright stakes is also to be avoided, inasmuch as there is not sufficient room for the development of the young canes and the fruit-bearing shoots together, and this bundling system is not favourable to a proper circulation of air among the ripening fruit. The espalier system of growth is much to be preferred, as it allows room for the fruiting branches to extend right and left, they receive an abundant circulation of air, the young canes have room to grow, and, finally, the fruit can be gathered with facility. The best Raspberries with which we are acquainted are the Red and White Antwerp, the Fastolf, and the Sweet White Antwerp. The autumn Raspberries—October red and yellow—unlike the common summer kinds, are of a drooping straggling habit, and partake more of the habit of the Blackberry or Bramble than of the Raspberry. They require a dry warm situation, in order that they may ripen off their fruit in a season when there is much rain and occasional frosts. They are more slender in habit than most of the summer sorts, and like the Bramble fruit on the current year's growth from the stool; they should, therefore, be entirely cut over early in spring. The Bramble

finds support on hedgerows, or on anything which may be near it, and autumn Raspberries must also have some support, else they get broken by the wind. A good plan is to drive in three strong stakes round each stool, and to fix them together at top by means of a wire or wooden hoop; spread out the canes and regulate and tie them to the hoop or wire, letting them hang over to the outside. All weak growths should be pulled up in summer, leaving only six or eight of the strongest. These autumn Raspberries must not be expected, to equal in flavour the summer varieties, nor are they so large as the Red and Yellow Antwerp. They are, however, very prolific, and come in to help the dessert and the cook at a time when small fruits are scarce. Raspberries may occupy the same situation for years in succession, and yield good crops where the soil and climate are favourable; but, in many instances, especially on dry soils, it will be necessary to renew them frequently, if strong growth is to be maintained, and, consequently crops of fine large fruit. The Raspberry has a tendency also to spread, and the stools get ragged and worn out. In forming new plantations, the strongest suckers should be carefully lifted and transplanted into nursery lines for a season, to gain strength and make roots and buds at the bottom, and the following season, when ground has been trenched and prepared for them, they may be finally planted. Old plantations will be much improved by having the soil dug away from around the stools up to the points of the roots, and also by shaking away the soil partly from the roots, and substituting fresh rich soil, spreading the roots well out in it, and afterwards well mulching with rotten dung. The canes of Raspberries should not be pruned or shortened until the wood has ripened and the foliage fallen; and there should be no deep digging between the rows, so as in any way to injure the roots.—*The Gardener.*

Cutting and Storing Grafts.—There is no better time to cut grafts than at the commencement of winter. In cutting and packing them away, there are some precautions to be observed. In the first place, let them be amply and distinctly labelled, as it is very annoying to find the names gone at the moment of using them. For this purpose they should be tied up in bunches, not over 2 or 3 inches in diameter, with three bands around each bunch—at the ends and middle. The names may be written on a strip of Pine board or lath, half-an-inch wide, a tenth-of-an-inch thick, and nearly as long as the scions. This, if tied up with the bunch, will keep the name secure. For convenience in quickly determining the name, there should be another strip of lath, sharp at one end, and with the name distinctly written on the other, thrust into the bundle with the name projecting from it. If these bunches or bundles are now placed on end in a box with plenty of damp Moss between them and over the top, they will keep in a cellar in good condition, and any sort may be selected and withdrawn, without disturbing the rest, by reading the projecting label. We have never found sand, earth, sawdust, or any other packing substance, so convenient, clean, and easily removed and replaced, as Moss, for packing grafts. It is needful, however, to keep an occasional eye to them, to see that the proper degree of moisture is maintained—which should be just enough (and not a particle more), to keep them from shrivelling. They must, of course, be secure from mice. Plum grafts, which are sometimes injured by intense cold, are generally better if cut before the approach of the severest weather and securely packed away.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Galvanised Wall Studs.—We have received from Messrs. Reynolds, of New Compton Street, Soho, samples of the kinds of studs which they make for wiring walls. They are made of galvanised cast-iron, with an eye in each, through which the wire passes, and in appearance are much neater than the wrought-iron eyes mostly in use for that purpose.

Twelve Good Pears for Walls in the Midlands: OAKLEY. The following is a selection of twelve good varieties:—Jargonelle, Louise Bonne of Jersey, Thompson's, Fondante d'Automne, Comte de Lamy, Maréchal de la Cour, Beurré Bosc, Doyenné du Comice, Glou Moreau, Josephine de Malines, Marie Louise, and Beurré Diel.—G.

Pruning.—It is said that the donkey first taught the art of pruning the Vine; man being merely an imitator, after seeing the good effect of thus cropping the points of the young shoots. It is not always the greatest wisdom to originate, but to turn to good account whatever by thoughtful observation comes within our reach.

Effect of Dry Summers on the Flavour of Pears and Apples.—Dry summers appear to give Pears and Apples flavour, but not size. Here Pears are delicious. Marie Louise and Louise Bonne of Jersey are excellent; and Beurré Diel, not generally good, is, this season, much better than usual. Beurré Hawley, Beurré Bosc, and Fondante d'Automne, just over, have one and all been truly grand in flavour, but not over large. Among Apples, King of the Pippins is a bright star, being handsome in appearance and good in quality; Ribston Pippin, yet the King of dessert Apples, are also fine this season. Peasegood's Nonesuch, which I have likewise seen, may be described as an improvement upon our old favourite, the Blenheim Orange, and if it bears in a young state, which it promises to do, it will certainly drive Blenheim Orange out of the market.—STAMFORDIAN.

THE KITCHEN GARDEN.

A PARIS MARKET GARDENER ON SEWAGE MANURE.

EVERY time that we visited the ground of the sewage garden at Clichy we were struck with the difference between the crops there, and similar crops in market gardens. The vegetables appeared to be only half the size of ours. It was the same in the case of field crops, and especially with the Beetroot and Maize. The season was moist, and, from the nature of the experiment, the manure was moist; we did not, therefore, form any opinion with respect to the value of the sewage. In 1868 the engineer-cultivators of Clichy were favoured by an exceptional summer. In that year they could compete with the best market-gardens in Pumpkins and Cardoons. But is there anything surprising in that? What these plants require is plenty of sunshine above, and plenty of water at their roots. Their salads, although apparently flourishing when young, had almost all damped off when gathering time came. The Cabbages were only a very moderate crop. The Leeks and Carrots the same. The Tomatoes were a short crop; the fruit was tolerably good, but ripened very late. The Melons planted out perished to the extent of three-fourths, and the remaining fourth was only saved by the exceptional heat of the summer. The White Celery was satisfactory, but the Celeriac was not. There was a very fine field crop of Maize; but the year was unusually favourable for this crop. The Beetroot was very inferior to that grown in the plain. The Potatoes were for the most part lost, but then it was a bad season for them nearly everywhere else. The badly-formed and strange-looking tubers, and numerous deformities of growth proved that the mode of culture employed had been unfavourable to them. The following are some of the most important of our observations:—On a space of 42½ square feet, we counted twenty tufts of French Beans—in a market-garden there would be forty to forty-five tufts in the same area. On a similar area were eighteen plants of Celeriac—in a market-garden there would be forty-eight plants, double the size. On a similar area were twenty plants of White Celery—in a market-garden there would be fifty-six plants, certainly finer. On a similar area twenty-four plants of Endive—in a market-garden there would be forty-eight. On a similar area eight heads of Cabbage—in a market-garden there would be thirty-six; and so on with all the other crops. The half of the ground is lost in the channels. It is impossible to make sowings and inter-plantings among the plants grown in this way, and yet the produce is only very indifferent in size and development. It is only at the distance of 15 or 20 leagues from Paris that these sewage crops could compete with those of the market-gardeners at Amiens. As for the Parisian market-gardeners, these experiments have taught them nothing worth knowing, unless it be the fact that they are still the most advanced men in their business, and that in this so much extolled sewage manure they will find nothing worth adopting. The field crops at Clichy did not offer a more encouraging prospect; on an area of 94 square feet we reckoned eighteen plants of Maize where there should have been double the number. On a similar area we counted twenty-one very middling plants of Beetroot. In the plain this space would be occupied by, at the least sixty-three, and at the most eighty-one plants, with finer roots and of better quality. All the other crops there called for similar remarks. Supposing for a moment that the plants grew as well at Clichy as they do with the market-gardeners, would the latter be able to draw any profits from their land, rented at from £24 to £30 an acre, if they grew their plants with such spaces between them? Assuredly not. Since the engineers have done so badly in an exceptionally good soil and an unusually fine season, the market-gardeners will, for a long time to come, stick to their good horse-manure.

Origin of Guano.—It has generally been believed that guano was composed entirely of the excrement of birds—the accumulation, perhaps, of centuries. Recent discoveries, however, have satisfactorily proved that birds are not the sole instruments of its production. Dr. Hahel, an American, has devoted many years to microscopic and chemical experiments on guano; and he has proved with certainty that it contains fossil sponges, and the *débris* of marine animals and plants. It is well known that, in the neighbourhood of the Chinchas, and other guano islands, the anchors of ships have brought up this substance from the bottom of the ocean. From these facts, and others equally interesting, Dr. Hahel concludes that the deposits of guano are the result of accumulations of fossil plants and animals, whose organic matter has been changed into an azotic substance, the mineral part remaining intact. The rapid consumption of the guano beds of Peru renders this subject an important one; already, in America, artificial guanoes are manufactured, which are principally composed of the refuse of fish.

A scientific commission, named by the Peruvian Government, to enquire into the position of the guano beds, announces the discovery of considerable quantities of it on the mainland. The ancient Peruvians were well acquainted with the value of these mines of wealth, and numerous traces are found of their having worked them. At Pabellon de Pica, it has been estimated that one bed alone contains six million tons, that the island of Lobos de Tierra would furnish two millions, and that in other situations a very large quantity of guano might be obtained; some of it, however, being of inferior quality. Some of the beds are from 60 to 90 yards in depth. They are covered by a stratum of chalk. There is no doubt that the Peruvian commission will be able to throw some important light on the origin of guano.—W. N.

Purslane in Paris Market Gardens.—Of this herb, two varieties are cultivated, viz., the green and the yellow. It is sown in January in a hot-bed under a frame, no other crop being sown along with it. The crop is cut with a knife, and the bed being immediately afterwards trimmed and cleaned, and the walks made over afresh, a second crop may be gathered. It is also sown in the open ground from March to August. In summer it is sown in a shady place. A few seeds may be sown in open beds among other plants fond of water, but the Purslane should always be pulled up before these are incommenced by it. It is always better, however, to sow it by itself. Each sowing should have a good covering of spent manure, and, as the seed is very small, it should be mixed with soil to avoid sowing it too thick. Seed is obtained by allowing some of the plants sown in spring to run. It should be gathered a short time before it is completely ripe, otherwise, from its smallness, it is liable to be lost. It will keep good for eight years. This plant is eaten either as a salad, or cooked.

The Potato Crop.—In this locality, early kinds of Potatoes, that escaped the late spring morning frosts and long duration of cold weather, paradoxical as it may appear, came into use earlier than in any previous season, thus showing that anything that checks the growth of stalk and foliage, so long as it does not actually kill them, favours early tuberization and good quality. The second earlies, and, indeed, all such crops as had finished growth by the middle of August, were both good in quantity and quality. All the later kinds, however, hereabouts, left growing or in the ground after the first week in September, have been much damaged by disease, and are, to a great extent, making a second growth, rendering them still more worthless; and the latest kinds of all left in the ground till October, have been almost a failure; indeed, to a large extent, not really worth taking up. I never saw Potatoes worse. A hard working industrious man, who had planted about 8 acres, mostly late kinds, told me that he was ruined through the failure of his Potato crop this season. When he commenced taking it up in the first week in October, he did not get one bag of good or sound Potatoes to ten diseased.—J. BARNES, *Exmouth*.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Christie's Self-protecting Broccoli.—This is the best self-protecting Broccoli with which I am acquainted. It is of the finest quality and very hardy, coming into use in March and lasting to the end of June. My stock of it came from a seedsman in Hull.—Richard Nisbet, *Askerby Park*.

Veitch's Autumn Cauliflower.—Let me add to what has already been said in favour of this Cauliflower that I have grown it from the time when it was first sent out, and found no difficulty in obtaining handsome heads of it in autumn, a season during which good heads of Cauliflowers are invaluable.—D. S. GILBERT, *Court Garden, Great Marlow*.

The Two Best Tomatoes.—We believe it is now conceded that the Trophy is the best late Tomato, and Canada Victor the best early. Growers will do well to select for seed the largest and smoothest of these two varieties, and lay them on a shelf to ripen. While varieties may degenerate by selecting seed at random, they will also improve by carefully picking out the best of each kind.

Walker's Early Regent Potato.—This Potato has been exceedingly fine here this season. The crop is abundant; and out of a couple of tons there is not half a hundredweight of diseased ones. The tubers are very rough in the skin, which is invariably a certain indication of good quality. When cooked, they are dry, mealy, and of the best flavour. Potatoes in general in this district are a fine crop and very free from disease, but I have seen none to equal this variety.—J. MUIR, *Clovenfords*.

Selected Lapstone Kidney Potatoes.—This season I have had splendid crops of all sorts of Potatoes. The American kinds, owing, I suppose, to the dry season, are drier and better flavoured than usual. But of all the Potatoes, both for crop and flavour, nothing beats the Selected Lapstone, which is so great a favourite with my employer, that he eats no other late variety. The crop of this Potato this season is perfectly astounding, and the tubers are of good shape and size.—R. GILBERT, *Burghley*.

Rampion in Paris Market Gardens.—Sown broadcast in June and July. A little soil or spent manure should be mixed with the seed, as it is very small. It is sown along with Carrots, and an interplanting may be made of Roman or Cabbage Lettices, but not if the Rampion is sown along with Radishes or Spinach. A slight mulching is given, and frequent gentle waterings as soon as the seed is up, else it will be withered by the heat. The crop comes in in February or March and continues for some time. The plants should be pulled up by the roots, as both roots and leaves are used in salads along with Corn-salad. No protection is necessary in winter, as this plant is not injured by frost. Seed is gathered in the second year from a few of the finest plants. The seed ripens in July and keeps good for five years.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

SPRING bedding plants, of all sorts, and the various dwarf and berry-bearing shrubs, recommended in former calendars to be planted out, will now be getting somewhat established in their respective beds, and all that will be required to be done for some time will be merely stirring and refreshing the surface of the beds and borders in which they grow, and keeping the surrounding turf and gravel walks as free from weeds as possible, falling leaves, worm-casts, and littery matter of all kinds. In cases in which it may not be intended to furnish the beds with spring flowers or shrubs, they may, as soon as the summer bedding plants are removed, be at once heavily manured and deeply dug; or the beds may be dug over roughly without the immediate application of manure, which should, however, be frequently turned over during the winter months, so as to be ready when wanted. Late-flowering plants, such as the various sorts of Pompones and large-flowered Chrysanthemums, when planted on borders, in front of low terrace walls, or in other situations out of doors, should, while in flower, have some temporary means of protection held in readiness for them, such as mats or frigi domo. It will be found to be difficult, if not impossible, to keep all parts of the grounds at present in thoroughly good order; and in many establishments this is neither expected nor desired. In out-of-the-way places, therefore, as well as in the immediate vicinity of deciduous trees, falling leaves may sometimes be permitted to lie until all, or the greater portion of them, are down, when a thorough cleaning up should at once take place. It will always be necessary, however, to keep lawns, walks, and drives in view of the residence, in good condition; and, in order to ensure this being always the case, it should be the appointed duty of one man (or, if necessary, more) to attend to this matter daily at an early hour. The transplanting and re-arranging of shrubs and trees, wherever such operations are considered necessary, should now have immediate attention, more particularly as regards evergreens, which are more susceptible of injury through removal than deciduous plants; in the case of these, early autumn planting is most likely to secure success, as it allows time for reparation before the temperature of the soil has fallen to any great extent. Standards of all kinds should be at once securely staked, in order to prevent wind-waving, and the surface of the soil should be afterwards well mulched with partially rotted manure. Ground work should be pushed forward with the greatest possible despatch while the weather continues open and favourable for operations of that kind.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

Those who have beds prepared, and who wish to substitute fresh Roses for such as have died off this summer, will now be able to obtain plants in excellent condition for planting; indeed, this is the proper time for planting if a good display is to be made next summer. Before planting it is advisable to examine all roots, and with a sharp knife to remove any that are bruised or that need pruning. Plant the strongest varieties in the centre, so that, when the bed is finished, it may form a pyramid. I always plant dwarf Roses 2 feet apart, a distance which allows plenty of room for air to circulate freely amongst them. The appearance of Rose beds may be improved by having a cordon of Roses round the outside of them on wire or other supports 1 foot high; keep them neatly trimmed, and edge the whole with *Stachys lanata* or *Funkia Sieboldii variegata*. Beds edged in this manner are permanent, and look well throughout the summer. A bed of mixed Roses, if kept in good condition, surpasses in interest all others in the flower garden, and is much more useful, inasmuch as when ordinary beds consist merely of foliage, and when we are put to our wit's end to find cut flowers enough to keep up the supply, Rose beds furnish us with what we want. Put a few pot Roses, the wood of which is well ripened, under cover for forcing. Those intended to be started first should be pruned at once so as to get the buds well up; prune out the weak growths, and cut down the strong shoots to three or four buds, according to the strength of the plant. All the pruning which Tea Roses require consists in cutting out the old flower shoots; plunge the pots in a bottom-heat, ranging from 55° to 60°, giving air during the daytime, and syringing with tepid water morning and evening.—H. G.

Kitchen Garden.

Now, when the principal sowings and plantings for this season have been completed, is a good time to determine matters respecting next year's campaign. A rough plan should be prepared of the kitchen garden, showing with what each plot of land has been planted during the past year, and indicating the rotation for the

coming season. If this is well considered now, manuring and trenching operations can be carried out with a view to the requirements of each particular crop. The plan should be drawn to a scale, in order that there may be no difficulty in determining the exact position of each crop, even though removed. It is necessary not only that plenty of everything should be provided, but that there should be no waste, and there is scarcely anything that better repays a little personal supervision than the gathering of vegetables, if a good supply is aimed at. If there is a good supply of manure too much stress need not be laid upon the rigid carrying out of any given rotation; still it is desirable to avoid, as far as possible, planting the same kind of crop two years in succession on the same land. This is a question, however, which hinges very much upon the manure supply, and its intelligent application. When a garden has to be heavily and constantly cropped, deep culture and heavy manuring must make up for any breach in the recognised system of rotation. As a rule, where much has been taken out of the land, much must be returned to it. All land intended for root-crops next season should be manured, if it is necessary, and deeply trenched as soon as it can be conveniently done, either throwing the soil up into ridges, or at least leaving the surface as much exposed to the action of the weather as possible. The manuring and digging of fruit-tree quarters and borders will be better delayed till the leaves are down, and the trees pruned, so as to avoid incurring unnecessary labour. In warm situations, if it is desired, one or two of the earliest Peas and Beans may be sown; but, considering the risk they have to run, unless attendant circumstances are favourable, it is a question whether it would not be advisable to delay such sowings till January, especially if they can then be started under glass. However, this is a question that every one must decide for himself. Remove the surface-soil from Asparagus beds; wheel on a good heavy dressing of rich manure, and replace the soil. Salt may also be freely applied at any time when growth is dormant. Horseradish should be taken up and laid in somewhere thickly, to be always at hand and easily accessible when wanted. Provide a good supply of green Tarragon, Mint, Marjoram, &c. Peas may also be sown in boxes in heat, to provide young green tops for flavouring soups, &c.—E. HOBDAV.

Indoor Fruit Department.

Peaches and Nectarines.—If the pinching and thinning of Peach trees has been well followed up throughout the summer months, little pruning will be necessary now; still, where not done, the usual winter pruning will require attention, except in the latest houses, in which the foliage is not yet down. Ordinary fan-training is that which is most practised, and also that by which a tree is best kept in health. Severe cutting of Peach trees, especially strong branches, should be avoided as much as possible; but, if the wood in a tree has been allowed to get too thick, which is a common fault, instead of nibbling away at the smaller twigs, branches of the older wood should be cut out, always having an eye to bringing up a succession of young wood from the bottom. In young vigorous trees, care must be taken to preserve well-ripened twigs covered with buds, cutting out the green soft branches, if thinning is necessary; but they must be retained if filling up is required. Some varieties, such as Rivers's Orange Nectarine and the Pine-apple Nectarine, are of a more dense and twiggy growth; and some, as the Noblesse Peach, are more given to lengthy growth than others; consequently, more caution is required with the latter. In tying the trees, see that every shoot has room to extend itself when growth shall have commenced, else there will be confusion and overcrowding in spring. Never shorten the bearing wood of a Peach tree. In late houses the foliage will be falling fast; keep all dry, and husband sun-heat; the foliage will fall while quite green through sheer lowness of temperature and damp. I like to see Peach leaves ripen yellow, like other foliage. The wood of dwarf trees in pots, or planted out, will want thinning and tying down in order to bring the trees into shape. Some sorts yield to this treatment well, others are more stubborn. Pendulous-growing sorts make handsome trees managed in this fashion; and, with fruit hanging down to the ground, they have a fine appearance.

Cucumbers.—The moist mild weather which we are still experiencing is favourable for late autumn and winter Cucumbers, much fire-heat not being as yet necessary for them. Continue giving abundance of air, so as to keep the plants strong for winter, and husband their vigour by cropping them lightly and keeping the growth thin. Every gardener has his own favourite sort for winter. With the majority, Telegraph is perhaps the favourite; but I prefer a good "strain" of Lord Kenyon or Syon House, and there are now many strains under various names of the old, short, white-spined sort. Avoid a large body of soil for winter Cucumbers; the plants ought to have sufficient command over the soil to exhaust it, when required, of its moisture. A body of wet effete soil is poison to winter Cucumbers.—W. D., *Canford.*

Vines.—It may be necessary in certain cases to start a Vinery earlier than usual, but too great a change in this way should not be attempted in any one year. If a period of six weeks or two months earlier is desired, it is best to spread such advancement over two years. This may be effected by starting the Vines three weeks or a month earlier than last season, and the same amount of time earlier next year from the date of starting this season. Where two or three different houses are planted with varieties suitable for early forcing they should be made to come in in rotation. In this way the youngest Vines would be allowed a natural midsummer growth for a few years. Young Vines planted during the past summer should be pruned immediately the leaves are down. The principle pruning needed in this case consists in the cutting over of the main stem, which should be shortened to within from 2½ to 3 feet of the ground. Cut away, too, all small lateral growths which may have pushed underneath where they were stopped. Where supernumeraries are grown for early fruiting, they should be cut 6 or 7 feet from the base, which length will bear half a dozen nice bunches next season. Those planted last year will have made two season's growth by this time; consequently, they will now have to be treated for their third and fruiting year. If the wood made this season is very strong and well-ripened, it should be cut at 4 feet further up the rafter than was directed last year; any weak shoot should be cut at a foot lower down, and if generally small the whole may be cut at that length. Prune all lateral shoots from these also, and the buds on this year's growth will be found to produce strong shoots and fine bunches next year; more than 4 feet of young wood should never be allowed to remain on any Vines which have not reached the top of the rafter, as rods so treated make a much more substantial growth thus restricted than when left longer. Vines fruiting for the first time this season should have their side shoots cut in to a couple of eyes, as formerly directed in the case of old ones. Where supernumeraries have been fruiting along with these they should be rooted out, if at all likely to overcrowd the permanent Vines next season. Very little loose bark will be found on any of these young Vines to remove before washing; and, as the borders will all have been recently made, and therefore fresh and otherwise in good condition, no top-dressing of any rich substance will be needed. A slight forking should be given to the surface, however, so that water may more readily reach the roots. Remove decaying berries from Grapes still hanging on the Vines, an important matter, requiring almost daily attention at this season. Black and white Lady Downes and black Alicante are the three kinds most exempt from decay, and they are the best sorts for winter supplies, either for the practical gardener or inexperienced amateur.

Pines.—The present is a very inactive time as regards Pine stoves. Where much fire-heat is confined in any house, care must be taken to admit a little air when the sun strikes the house, otherwise the foliage is very liable to get scorched when the temperature rises above 80°. Crowns, and any odd suckers of such precious sorts as smooth Cayennes, Charlotte Rothschild, Prince Albert, and any other favourite kinds may yet be propagated in 5-inch pots, and plunged in a smart bottom-heat of 90°, in order that they may root quickly. The above-named varieties do not produce suckers abundantly; crowns of them are, therefore, generally potted and grown into plants, and very good plants they make; but, as it is throughout the winter that the crowns of such are most plentifully obtained, a small corner, with a strong bottom-heat, should be reserved, in which to place them as they are produced. Give the plunging material a liberal watering when it shows any indication of becoming over-dry. This feeds the roots, and keeps the atmosphere in good condition.—J. MUIR, Clovenfords.

Indoor Plant Department.

Ixoras and Dipladenias, that were recommended to be cut back last month will now have broken, and ought to be potted; the roots of the Ixoras should not be disturbed more than is necessary; merely remove a few inches of the surface soil, and place them in pots 3 inches larger than those which they previously occupied, using nothing but good peat and silver sand. Dipladenias ought to be shaken half out of the old soil, without injuring the roots more than is necessary, using good peat, not too close, and plenty of sand. Keep the plants through the winter drier than the majority of the occupants of the stove. Allamandas, Clerodendrons, and Bougainvilleas should now be dried off, but not yet cut back, keeping the soil quite dry, and do not submit the plants to a lower temperature than 50° at night. Caladiums gone to rest, or that show signs of soon being in that state, should have water withheld, and should be placed where they will have not less than 55° or 60° night temperature. Any of the stock affected with mealy bug, scale, or thrips, wash thoroughly with "Abyssinian mixture," or Fowler's insecticide; 3 oz. to the gallon will kill thrips, 5 oz. brown scale, and for mealy bug and white scale, 6 oz. or 8 oz., according to the ability of the plants

to stand a strong dressing. When the strongest dressing is resorted to, the plants ought to have all the tender shoots, if any, cut back. Where mealy bug exists, a vigorous effort should now be made, when the plants are comparatively at rest, to thoroughly exterminate it. We frequently hear it said that, when once it has got possession of a collection of plants, it cannot be got rid of; but that is a mistake. It is merely a question of time and perseverance. The moisture necessarily used in stoves causes the inside of the glass, wood, &c., soon to get coated with a dirty deposit, which should now be cleaned thoroughly off. Now, or soon, replace the old tan by new material. If a good body of it is got in now, the heat which it gives off will, during the winter months, materially assist to keep up the necessary temperature, and, consequently, save fuel. The heating apparatus should be overhauled, to see that it is in proper working order. In Fern-houses, reduce the temperature and use less water at the roots, and also in the atmosphere, than hitherto, so as to induce the plants to go comparatively to rest, which is necessary to their making luxuriant growth when expected to do so; it will also harden the plants so as to make them in much better condition for cutting, for the season is fast approaching when they are indispensable for mixing with flowers in vases in quantity. In forcing houses a moderately brisk temperature and moist atmosphere should be maintained. *Serico-graphis Ghiesbreghtiana*, a valuable winter-flowering plant, should be placed near the glass, syringed every fine day, and plentifully watered; *Eucharis amazonica* should be plunged in bottom heat, and also liberally watered, as should likewise plants of *Poinsettia*. Young plants of *Euphorbia jacquiniæflora* should be kept as near the glass as practicable. *Justicias*, *Pentas carnea*, *Salvias*, *Heliotropes*, and similar plants, should also be brought into flower in these houses, and from thence be transferred to a cooler situation and a drier temperature. *Camellias* should be removed from the forcing house as soon as their blooms begin to expand. *Rhododendrons*, *Azaleas*, *Kalmias*, *Weigelas*, *Luculia gratissima*, *Forsythia viridissima*, *Deutzia gracilis*, *Dicentras*, and Dutch bulbs that have commenced growth out of doors under ashes, should now be placed in these houses in quantities required, but at first they should be set in the cooler parts of them.

Orchids.

This, though a dull month for most things, suits such plants as belong to the *Odontoglossum* Bluntii, and *Pescatorei* section well; most of them are now making their growth and enjoy a dull humid atmosphere, varying from 45° to 55°; such as want potting, should now receive that attention, the fresh soil being very beneficial to them. They should not, however, be over-potted, which is apt to cause the bulbs to rot. Now is a good time to pot *Disa grandiflora*, which grows well in a mixture of rough peat and manure from an old Mushroom-bed, charcoal, and sand in equal proportions. *Disas* also enjoy a temperature varying from 45° to 55°, and they should be syringed twice a day. *Mesospidium vulcanicum*, *Masdevallia tovarensis*, *Oncidium nubigenum*, *Odontoglossum Cerventesi* and *Rossii*, and many others likewise flower freely in a similar temperature. *Cattleyas* belonging to the *Trianae* section will now have completed their growth, and should be allowed to have as much light as possible, in order to ripen their pseudo bulbs, and thus encourage them to flower well. *Coclogyne cristata*, *Cypripedium villosum*, *Pilumna fragrans*, *Dendrobium chrysanthum*, *D. infundibulum*, *Epidendrum vitellinum* all do well in a temperature ranging from 55° to 60°, and should all be well supplied with water while growing. We have now various Orchids that bravely maintain the gaiety of the Orchid-house at this time of the year, such as *Odontoglossums* of different kinds, *Oncidium tigrinum*, *Lælia autumnalis grandiflora*, most of which are now in flower. A constant look out for cockroaches must be kept up, as, owing to fire-heat being more freely used than hitherto, they are induced to make their appearance in greater numbers; some of the many poisons recommended for their destruction may be of use, but a great many may be destroyed by spending an hour or so every evening in looking over the plants, an inspection which often prevents choice flower-spikes from being eaten off by those pests.—M. CULLEY, Ferniehurst, Shipley, near Leeds.

Hardy Fruit.

Of all horticultural operations, perhaps, root-pruning is the one that demands the most skill, and receives the least. Some perform it with a few chance thrusts with the spade in the dark. They believe the roots to be somewhere within a few yards of the bole, and reason that if they cut all round within a yard or so, the roots must of necessity be cut—that is pruned. I have seen choice trees root-pruned by a very similar process. Gangs of men in twos or threes, with sharp spades, have opened trenches all round the trees, cutting all roots—fertile, sterile, big, and little—with equal severity and to equal lengths. It is worse than pruning the top on similar principles; and yet to describe a line in the air, and cut the

tops all over alike to that imaginary mark, would be considered the height of absurdity. But it would be less reprehensible than many of the rough and ready modes of root-pruning now in operation; for the roots are more irregular in their growth than the tops. The worst and the best of them are generally found where least expected; hence the importance of an examination before operating upon them. Doubtless, the uncovering of roots involves much labour and care, but root-pruning is one of those operations that had better be left alone, or done carefully. The first step that should be taken, is the uncovering of all the best roots. This work is less laborious than it seems, for most of the best roots are found near the surface; and, when these are sighted, the others may be cut away without fear of injury, and with the assurance of certain benefit. After a little experience the root-pruner will be able to remove the wood makers and reserve the fruit makers; the wood makers are mostly found under the trees. It is not needful to trace out these. They may be cut off sharply within a foot or 18 inches of the bole of the tree. To make sure of this, the entire under-surface should be penetrated through with sharp spades, and the severing of these vertical roots, and disturbance of the horizontal ones for examination, will be found sufficient root-pruning. By this mode of procedure only the worst roots are pruned off, whilst, by the more common method, it often happens that only the best are mutilated. There is one more point to be noted—the disturbance of the roots for examination, while, necessarily, a root-pruning, to some extent, is also a good substitute for it. Were it possible, which it is not, to examine roots without removing any, the mere removal of the soil and the laying of fresh hold again are equivalent to a root-pruning. This is a point that has not received the attention from cultivators which it deserves. Root examination may often supersede the necessity of root-pruning. It may answer the same purpose, and may also reveal a state of things that proves pruning not to be the remedy needed. —D. T. FISH.

November in a Paris Market Garden.*

Break up the spent manure and form it into ridges; collect and bring fresh manure to the places where it is to be used. Make the first hot-beds for black-seeded Lettuces. These beds will be turned over in January; then make the beds for Carrots and Cabbage Lettuces. Manure the beds for Cœur de Bœuf Cabbages; make Mushroom beds; force Asparagus, Sorrel, and Tarragon. Bring out frames and lights, and wash cloches. *Sowings*.—On hot-beds: short round early Carrots along with Spinach, either sown or transplanted. Spinach, or small salad among the rows of Cabbages and in the vacant spaces intended for Melons in May; Chervil in drills; Saint Thérèse under cloches; Green Peas under frames. *Plantings*.—On hot-beds under frames: black-seeded Lettuces and Spinach; roots of Sorrel to be forced. In drills: Cœur de Bœuf Cabbages. Along the walls: Passion Lettuce. *Treatment of Growing and other Plants*.—Earth-up Artichokes; store Beetroot in the cellar. Before the 10th, plant white Celery deeply, and earth-up before the 20th for fear of frosts; frozen Celery is ruined if touched; take up Celeriac and put it in a trench under 4 inches of soil; give air to Cabbage and Roman Lettuces under cloches; re-plant Roman Lettuces at the end of the month, placing nineteen plants in the space previously occupied by twenty-four, and six or eight where there were twelve; weed and cover the plants with mats if the temperature sinks to 3° or 4° below zero. *Crops Gathered*.—Blanched Asparagus forced, green Asparagus in hot-beds, Sorrel in hot-beds, Cardoons, Carrots, white Celery, Celeriac, Chervil, Mushrooms, curled Chicory, white Chicory, Cauli-flowers, Milan Cabbage, Brussels Sprouts, Broccoli, Scallions, Pumpkins, Cress, black-seeded Lettuce under frames and cloches; Corn salad, Turnips, Parsnips, Parsley, Leeks, common Beet, pink, red, and black Radishes, Rampion, Salsafy, and Scorzonera. *Special Remarks*.—No change is made in the hot-beds. The Endive, if in any way necessary, may be replaced by white Celery, and the latter by Cabbages, the Spinach by Corn-salad in the raised beds, the Corn-salad by Chicory under frames, the white Celery by Celeriac, the Cabbages by Sorrel, Parsley, or Scallions, the latter by Chives, the white Onions by Chervil, the latter by Spinach, the Chives by Corn-salad, the Cabbages by Chervil.

Tussock Grass.—Unfortunately the specimens of Tussock Grass gathered in the Nightingale Islands were lost in the fight with the penguins and grebes. I have, however, no doubt that the Grass is the same as that gathered in Tristan d'Acunha, which is a *Spartina*, doubtless *S. arundinacea*. I gathered specimens of the Grass in both islands, and the inflorescence and

growth appeared to be identical. In the penguin rookeries this Grass, known to the inhabitants of Tristan as "Tussock," has a habit which appears to be closely similar to that of the Falkland Tussock, *Dactylis cæspitosa*, as described by Dr. Hooker in the "Flora Antarctica," p. 384. The Grass grows to a height of 5 or 6 feet. It springs in tufts, and forms massive boles or clumps at its base, composed of the contorted bases of the stalks and root-fibres closely matted together. These masses are tough and hard, almost requiring an axe to cut them. The Grass thrives best where the ground is saturated with the penguin's dung. The basal masses gradually pass into a peaty condition; and in the rookeries there are beds of black peaty richly-manured soil, thus formed, several feet in thickness. The growth of the Grass is so dense that it is with the utmost labour that a way can be forced through it, except along the penguin roads; and it is so high, that it is only by mounting on an occasional rock, fallen from above, that the direction which has been taken can be made out.—*Linnean Society's Journal*.

ODE.

Dedicated to the Hon. Marshall P. Wilder, twenty-five years President of the American Pomological Society.

FROM him who was lord of the fruits and the flowers
That in Paradise grew, ere he lost its possession,—
Who breathed in the balm and reposed in the bowers
Of our garden ancestral, we claim our profession;
While fruits sweet and bright
Bless our taste and our sight,
As e'er gave our father, in Eden, delight,
And fountains as pure in their crystal, still gush
By the Vine in her verdure, the Rose in her blush.
While others into clouds sit to murmur and grieve
That Earth has her Wormwood, her pitfalls and Brambles,
We, smiling, go on, her rich gifts to receive,
Where the boughs drop their purple and gold on our rambles.
Untiring and free,
While we work like the bee,
We bear off a sweet from each plant, shrub, and tree.
Where some will find thorns but to torture the flesh,
We pluck the ripe clusters our souls to refresh.
Yet not for ourselves would we draw from the soil
The beauty that Heaven in its vitals has hidden;
For, thus to lock up the fair fruits of our toil
Were bliss half-possession and a sin all-forbidden.
Like morning's first ray,
When it spreads into day,
Our hearts must flow out, until self fades away.
Our joys in the bosoms around us, when sown,
Like seeds, will spring up, and bloom out for our own.
And this makes the world but a garden, to us,
Where He, who has walled it, his glory is shedding,
His smile lays the tints; and, beholding it thus,
We gratefully feast while his bounty is spreading.
Our spirits grow bright
As they bathe in the light
That pours round the board where, in joy, we unite.
While the sparks that we take to enkindle our mirth,
Are the gems which sprinkle down o'er the earth.
And, now, that we meet, and the chain is of flowers,
Which binds us together, may sadness ne'er blight them,
Till those who must break from a compact like ours,
Ascend, and the ties of the blest re-unite them!
May each who is here
At the banquet appear,
Where Life fills the wine-cup, and Love makes it clear.
Then Gilead's balm in its freshness will flow,
O'er the wounds which the pruning knife gave us below.
MISS HANNAH F. GOULD.

OBITUARY.

DR. LANKESTER.

We have to announce the death of Dr. Edwin Lankester, whose name has been somewhat intimately connected with the progress of botany and horticulture for many years. Dr. Lankester's first important work was the "Natural History of Plants Yielding Food," a book full of interesting research, carefully put together; and his "Memorials of John Ray" and the editing of the correspondence of the greatest of English naturalists were welcome contributions to the annals of natural history. He subsequently published an excellent translation of Scheider's "Principles of Scientific Botany;" and, by command of her Majesty, edited the "Natural History of Dee Side;" and, in 1868, appeared his "Vegetable Physiology." These and many works in other branches of science, and innumerable lectures given during his various professorships, completely filled a life of unceasing and ever-useful industry, which has been closed at the comparatively early age of sixty-one.

* Under this head we propose to give twelve calendars during twelve months, detailing the practice of one of the best market gardeners near Paris.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

PLANTING HILL-SIDE APPROACHES.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

FROM time immemorial, people have selected wooded mountain sides or elevated plateaus for building sites, from which extensive views of the surrounding country might be readily obtained. At the present time in the west of Scotland, on the elevated lands along the shores of our inland lochs (or arms of the sea as they are termed), every available spot has been taken advantage of for building purposes, and the same arrangement may be observed round the shores of most of the celebrated watering-places throughout the United Kingdom. A few hints, therefore, as to the laying out of certain portions of the grounds round such houses, particularly the approaches leading to them, and the flower-garden department, may not be altogether unacceptable to your readers. The making of a carriage road leading to some of these hill-side residences, is often fraught with considerable difficulty; sometimes a passage has to be cut out of solid rock, or rock covered with soil or clay, and often amongst thick forest vegetation. In some cases blasting to a considerable extent has to be resorted to, and the after beautifying of these crude slopes, which in no place ought to exceed 8 or 10 feet on the highest side, is often considered by the proprietor to be attended by many difficulties, which, in most cases, are only imaginary. In order to take off the wall-looking appearance which many of these cuttings are apt to present, the line of drive should be curved as much as possible, and the sides of these cuttings should be made somewhat shelving, with here and there portions more or less sloped backwards; if rocky, the steeper parts should be so arranged as to form as many spaces as possible for the purpose of holding soil, in which a variety of plants can be grown, or seeds sown, the kinds selected being such as naturally frequent similar localities, such as the Wild Wallflower, Snapdragon, Rock Catchfly (*Lychnis Viscaria*), Foxglove, Viper's Bugloss (*Echium vulgare*), Evening Primrose (*Ethiopia biennis*), Columbine, and many other plants of a similar character; on the lower parts might be sown seeds of *Linaria alpina*, so abundant along the rocky passes in Switzerland, besides *Anthyllis Vulneraria*, *Geranium Robertianum*, *G. lucidum*, *Dianthus deltoideus*, *Valeriana montana*, *Corydalis lutea*, and a host of others. Perennials, Alpine, herbaceous, and trailing shrubby plants, are also admirably adapted for such rocky cuttings, such as *Lysimachia nemorum*, and *L. nummularia*, *Convolvulus arvensis*, *Fragaria lucida*, *Polygonum vacciniifolium*, *Veronica alpestris*, various Primroses, all the trailing species of *Potentilla*, such as *P. repens* and *P. stolonifera*, *Periwinkles*, *Arctostaphylos Uva-ursi*, *Cotoneaster microphylla*, *Helianthemum*, *Eriogonum*, and many varieties of the small-leaved Ivies. Native Ferns should be very freely planted in such situations, and if the rock is at all of a soft character, it will render the insertion of roots the more easily accomplished. The tufts should be put in any time during the winter or spring months, at which period the plants are in a resting condition. The chief object to be kept in view, is to render these artificial rock slopes in keeping with the surrounding scenery. It is not to be expected that such places are to receive the same attention as a regular artificial rockery; on the contrary, they should be left a good deal to Nature. If portions are so constituted as to allow peat soil to be put in, many of the better kinds of Ferns could be introduced. In some places trees of large size have to be cut down along the upper surface of such slopes, and frequently great expense is incurred in rooting them up; such tree stumps, if partially opened by a slight blast of gunpowder, or by the dynamite process, become excellent receptacles for hardy Ferns; a little peat mixed with sand, or heavy loam, being previously put in to fill up the crevices. In such positions, the Royal and Ostrich Ferns present a noble appearance; also, the Crested Male Fern, surrounded by any of the ordinary British dwarf sorts, as the Oak, Beech, and Holly Ferns, Hart's-tongue,

and other Cryptogamic plants, such as *Lycopodiums*, *Equisetums*, and vegetation of a similar description. In some localities smooth and rocky surfaces interfere with the intended arrangements, but such places can also be made available for Ferns and other plants by being opened up with a blast of dynamite, filling the openings thus made afterwards with soil, and planting in the same manner as recommended in the case of old tree roots. Such situations cannot be kept altogether free from the natural Phanogamic plants of the district, but that matters little, as a clothed surface is what ought to be aimed at; besides, the beauties of the native vegetation become enhanced by having a better class of plants introduced amongst it. Here and there loose stones or portions of rock may be piled together in heaps with irregular outlines amongst the tree stumps; and, if the spaces between the stones be filled with the natural surface soil, they will be found to be excellent places for Ivy, *Cotoneasters*, and *Periwinkles*. Rude as such constructions are, they furnish variety, and use up to advantage material that might otherwise lie about in the shape of unsightly rubbish. For sloping rocky sides *Rhododendrons*, particularly the varieties of *R. catawbiense* and *R. ponticum*, are admirably suited; and if it can be arranged to introduce some peat soil they will thrive well and soon partially conceal large portions of the rock. The *Rhododendrons ferrugineum* and *hirsutum*, if planted on some of the lower ledges, will also soon form interesting objects. In such situations few plants will be found more pleasing than the *Azalea pontica*; its Honeysuckle-looking heads of yellow flowers are interesting during the summer months, and its glorious crimson leaf-tints during autumn make it a beautiful object for such rocky approaches, as well as in the open spaces of the more trimly-kept approaches in lowland districts. *Fuchsia Riccartoni* can be easily introduced into such situations, and will be found to grow and flower admirably; and, if the locality is at all exposed to the sun, young plants will be found to come up freely from seed on many of the projecting rocky cliffs. The *Deodar* is a very desirable tree for placing here and there along the top of the banks, provided there is depth enough of soil for it; the upright growth of its stem and pendent branches make it a peculiarly graceful object in such positions. An infinite variety of other plants, and contrivances for their reception, even in a rustic manner, are much more in character with the surrounding scenery, and more pleasing to the eye, than the attempts which are sometimes made to modernise such places, and fill them with plants quite unsuited to them. Round such hill-side or mountain residences we often see flower plots cut in regular geometrical figures, filled with scarlet *Geraniums*, *Verbenas*, *Calceolarias*, and similar plants, which do not in the smallest degree harmonise with their surroundings, particularly in places where wild mountain scenery, although distant, is seen from the flower garden. This gaudy foreground of crimson, blue, and yellow, and other strong colours which such flower plots generally exhibit, frequently outstrips the richly-tinted hills, even though their tops and sides glow with native Heath. Instead of gay flowers, such mountain residences ought to have clumps or compartments formed of rock-work, standing on Grass. Garden decorations of this kind look infinitely better, and are more in keeping with the surrounding scenery than the generality of those now to be seen. Useful stones for the formation of rock-work are generally abundant in such localities. Many of these artificial mounds may consist almost entirely of rock-work, the higher portions of which should be clothed with hardy Ferns of the taller and better kinds; and the sides, if not all composed of Ferns, may be filled with hardy perennials or summer flowering bedding plants, while other clumps may be cut out in the turf, or formed with rock-work sides, and filled with the better class of hardy Heaths, such as the double-flowering *Calluna vulgaris*, *C. Alportii*, *C. Serlii*, and *C. Hammondii*, *Erica cinerea* of different sorts, *E. mediterranea*, *E. vagans* of sorts, as well as the dwarf *Menziesias*, *Andromedas*, *Daboecias*, and similar plants. Such species, having flowers of partially subdued colours, are very suitable for hilly districts; besides, such plants are not liable to be injured by early frosts, a circumstance which too often happens in the case of ordinary bedding plants in high situations; the more tender plants, indeed, rarely arrive at

maturity in many high-lying districts, where they suffer much from late spring frosts, from which they have often scarcely recovered before they are overtaken by the early autumn colds. Under these circumstances the varieties of natural mountain plants are better adapted for such situations—either in or out of flower, provided they are well kept in shape—than any others. In no instance are plants in a state of nature to be seen in our mountain districts with gaudy-coloured flowers, although they frequently abound in corn-fields. In the case of lowland scenery, where the land is naturally level and little seen beyond the boundary of the flower garden, the system of massing gay colours together is less objectionable. Our mountain districts are now very much frequented by tourists from all quarters of the globe, and all seem delighted in seeing the green Moss-covered dry stone walls (or dykes as they are termed) literally clothed with common native Ferns. The same amount of pleasure will be experienced if the artificial rocky avenue slopes alluded to are made to resemble them. This style of approach has recently been carried out in a scientific manner on the steep avenue banks at Fetter Mount, Lasswade, near Edinburgh, where Mr. Potts has rendered the artificial slopes leading to his mansion most interesting, these being clothed with a series of native Ferns and perennial Alpine plants, particularly species of the genus *Saxifraga*, *Sedum*, *Sempervivum*, *Aubrietia*, *Primula*, dwarf *Veronicas*, and a host of others; some of them having an interesting appearance during every month in the year. At the same time it is, perhaps, more thickly clothed with Alpine rarities than I would recommend for many of the avenues or approaches in mountain districts to which the observations just given more particularly refer.

NOTES OF THE WEEK.

— THE handsomest evergreen flowering shrub we have seen for some time past is *Arbutus Croomi*, now in flower at Glasnevin. In growth the shrub is like the common *Arbutus*, but the flowers are much larger, and have a rosy-salmon stain, which makes them very attractive. The shrub reminds one of the fine plants of *Enkianthus* seen in large conservatories and botanic gardens in Italy. Dr. Moore considers it a hybrid.

— FEW climbing plants are so brilliant just now as *Tropæolum Lobbianum*, which is literally a mass of scarlet, rendering many a cottage porch, even thus late in the year, quite gay with flowers.

— MR. BRUSH, gardener to Lady Hume Campbell, showed at South Kensington on Wednesday last, a Neapolitan Violet, which is a decided improvement on the common Neapolitan kind, richer in hues and larger; it was introduced from the south of Spain, to Lady Hume Campbell's garden at High Grove. Mr. Brush also showed a very promising purple tree Carnation, named Lady Fuller.

— ACCORDING to the *Kentish Observer*, a large kind of Sloe or Wild Plum, peculiar to the country around Halstead, and known locally as "Skeggs," growing in hedgerows and fruit plantations, has been very abundant this year. It is estimated that in the parish of Halstead alone 8,000 sieves will be gathered. It is the largest growth ever remembered in the neighbourhood, the fruits hanging in such dense clusters that the trees are obliged to be propped. A good hand can pick from ten to twelve sieves a day, and the price usually paid for gathering is about 6d. per sieve. The fruits are used for making what is known as British port wine.

— IN Sweden gardening forms a part of the educational system. Upwards of 2,000 schools have gardens for planting attached to them, and the teachers of elementary schools are obliged to learn gardening. There is a garden attached to the Higher Bungher School at Utrecht, in which botanical specimens are planted, arranged, and classified by the pupils. To some extent, gardens have been apportioned to schoolboys in this country, but rather as a means of recreation than of study. The Duke of Northumberland's School, at Alnwick, affords an instance in point. But it is worthy of much wider adoption in country districts.

— PROFESSOR GABBA has been examining the effects of ammonia on the colour of flowers. It is well known that the smoke of tobacco will, when applied in sufficient quantity, change the tint of flowers; but Professor Gabba's experiments consist in pouring a little ammonia liquor into a saucer and inverting a funnel over it. Placing the flowers in the tube of the latter, he finds that blue, violet, and purple-coloured blossoms become of a fine green; carmine and crimson become black; white, yellow; while parti-coloured flowers, such as red and white, are changed to green and yellow. If the

flowers are immersed in water, the natural colour will return in a few hours. Professor Gabba also found that *Asters* acquire a pleasing odour when submitted to the fumes of ammonia.

— *BROWNEA COCCINEA* is now blooming in the Aroid-house at Kew, and is very ornamental, its pendent clusters of flowers being of a rich scarlet colour. The large white-flowered *Dahlia Imperialis* is also flowering freely in the Palm-house.

— To the usual attractions at the Crystal Palace there is at present added a fine display of *Chrysanthemums*, which are well worth a visit. They will be found effectively arranged in the centre transept.

— Those interested in Orange culture may like to know that a series of letters written by J. H. Fowler, of Port Orange, and printed in the *Florida Agriculturist*, has been published by C. H. Walton & Co., of New York, in a pamphlet form. It is a subject on which small practical books are scarce.

— A FRUIT-GROWING correspondent writes to us to point out how admirably the ingenious ice-house arrangements shown in the *American Agriculturist*, and reproduced in last week's GARDEN, are calculated for the long and perfect preservation of choice fruits and vegetables.

— MR. WILLIAMS's new Maiden-hair Fern (*Adiantum gracillimum*) has now been proved to be the most remarkable of all recent introductions in its way; the plant shown at Kensington on Wednesday last, was a marvel of graceful beauty. It is destined to become as popular as the old *Adiantum cuneatum*.

— SOME very fine specimens of the white Calville Apple, grown in Mr. Leigh's garden at Barham Court, Kent, were shown at Kensington on Wednesday last. It will be remembered that it was at one time supposed that this Apple could not be grown in perfection in the open air in this country.

— A RECENT gale demolished a stately Thorn tree, considered the largest, if not also the oldest, in Scotland, which, for many generations, has stood in close proximity to the old Greigston Mansion House, Cupar, much admired in summer when mantled in white blossom, and in winter for its old weather-beaten aspect.

— THE widow of the late Joseph Locke, the eminent engineer, presented a park of some 18 acres to the town of Barnsley, and invested £3,000 in Consols to maintain it. Miss M'Creery, the only surviving sister of Mrs. Locke, has just presented three parcels of ground, which will make the park 40 acres in extent.

— ONE of the largest importations of *Todeas* ever made to Europe has (says the *Scotsman*) just been received at the Bangholm Nurseries of the Lawson Seed and Nursery Company, and admirers of such Ferns would do well to pay them a visit before they are distributed. The collection numbers about 500 specimen plants, and it is contained in two large houses.

— A MOVEMENT is in progress for securing the laying out of a new park or recreation-ground on a plot of land adjoining the Metropolitan Extension line of the London, Chatham, and Dover Railway, situated between the Loughborough Junction and Camberwell New Road Stations. The ground in question, which is about 13 acres in extent, is known as Myatt's Fields, and was, until within the last two or three years, occupied as market gardens.

— THE Lindley Medal has at last been prepared. It is a handsome work of art, and its value is estimated at £15. On the obverse side is a portrait of Dr. Lindley, enamelled with a Laurel wreath, and the inscription, "Dr. John Lindley, F.R.S., born February 5th, 1799. Died November 1st, 1865;" on the reverse, Flora with a wreath in her left hand, and the inscription, "Royal Horticultural Society."

— A PAPER has lately been read at the Paris Academy of Science, on the fermentation of Apples and Pears, by MM. G. Lechartier and F. Bellamy. The experiments described have been carried on since 1872, and are considered by the authors as a demonstration of Pasteur's deduction from his theory of fermentation, that "the formation of alcohol is due to the fact that the chemical and physical life of the fruit cells is continued under new conditions in a similar manner to those of the cells of the ferment."

— LONDON, one of the healthiest cities in the world, might be much more so by the general adoption of a movement now going on in Camberwell, to provide a public park and children's playground for that locality. The ground, once occupied by market gardens seems admirably fitted for the purpose, and might, at a little cost, be appropriately laid out. The demoralising life led by the children in the streets more than justifies the promoters in their house-to-house canvass in favour of the scheme. We, *Lancet*, hail the movement as one likely to be followed up in other neighbourhoods where John Knox's saying *apropos* of the monasteries and their inmates, "Ding down the nests and the rooks will flee away," might be parodied with even more salutary effect, "Ding down the rookeries and disease will flee away."

THE INDOOR GARDEN.

COCHLIOSTEMA JACOBIANUM.

THIS singular plant, with Agave-like foliage, and somewhat Orchid-like blossoms, is one of great beauty. A plant belonging to the same genus was introduced to our gardens some few years ago, and more than one of our principal nurserymen flowered it successfully. M. E. André, however, who, in the *Revue Horticole*, recently gave a figure of what he deems to be a new species, appears to think that the elder species is now entirely lost to our English gardens; but, whether he has sufficient proof that such is the case we doubt, as the name appears in some of our nurserymen's catalogues. He speaks pretty confidently, however, of its disappearance from the establishment of Messrs. Veitch, and also from that of M. Verschaffelt, of Ghent. Our engraving will serve to convey an excellent idea of the Agave-like foliage of the plant described as a new species by M. E. André. A wood engraving, however, can give no idea of the beauty of its inflorescence. The petals of the flowers, which are of a soft velvety purple, measure $1\frac{1}{2}$ inches across, while the sepals are of a pale rosy-white. The spoon-shaped bracts are of a deep

WINTER TREATMENT OF HALF HARDY PLANTS.

WILL you kindly tell me how I may preserve several scores of scarlet, Mrs. Pollock, and Bijou Geraniums, scarlet, white, and purple Verbenas, and Calceolarias; and, also, how to make the best use of two frames which I have just built—each being 12 feet long, 4 feet wide, 3 feet high at back, and 2 feet at front. The walls are 4-inch brick, Portland cemented outside. Should they be plastered and whitewashed inside? The floors are of thick flags on a dry rubble bottom, with a grate, gully, and drain to each frame to carry off the water after watering. A 2-inch pipe runs round each, and is heated by a boiler in my house cellar; by a valve between the two frames the hot water can be confined to one, and the other left cold. I have about 450 plants, and each frame will hold about 300. To begin with, the plants have just been taken out of the beds and potted just as they are, singly in 48-sized pots, and placed on tiers of deal boards close to the glass. As this climate is very wet the Geraniums grew like Cabbages in my rich beds and hardly flowered at all, so I want to try keeping the old plants and plunging them in their pots in the beds next summer. Can Verbenas and Calceolarias be so treated? As I intend buying fresh bulbs every year so as to be able, by turning them out of the borders as soon as they are past their prime,



Cochliostema Jacobianum.

bright salmon colour, the whole of the stalks being of a paler tone of the same colour, flushed at the joints with a full-brownish pink. The flowers exhale a delicate perfume, similar to that of certain Oncidiums, to the blossoms of which they present a superficial resemblance. The beautiful flowers of *C. Jacobianum* have the defect of being exceedingly evanescent, as noticed in the previously-known species which has flowered in England. This defect, however (which is peculiar to nearly all Commelynaceous plants), is more than counterbalanced by the profusion with which the flower-spikes are seemingly produced on well-grown plants. In the new (?) species described by M. E. André, he relies for its distinctness on the following differences from the old one. First, by the far less hirsute character of the flowers; and, secondly, by the uniform green of the leaves, the elder species having them either strongly blotched or bordered with purple. He also relies on the much larger general dimensions of the plant. It is presumed that so large a plant can only be an epiphyte upon some of the forest giants that clothe the deep slopes and valleys of equatorial America. In a shaded part of the stove it is not difficult to flower, and its multiplication may be effected by the separation of the small lateral buddings until seeds shall have been obtained. It is well worthy of a place in the Orchid-house. N.

to gain a lot of space for succession crops of flowers, I shall have to propagate and preserve a number and variety of plants; and, on account of the proximity to the house, I do not wish to put manure in the frames for a hot-bed. Can I manage to get three successions, say (1) bulbs, (2) brief summer-flowering plants—or what? (3) Gladioli, Tritomas, &c., brought on in the frames and put in beds in their pots. Can I make any use in winter of a warmly-built but unheated summer house, 8 feet square, which can be either made very light or darkened. I shall be greatly obliged if you will kindly instruct me how to treat my bedding plants and make the best possible use of my frames. LANCASTRIAN.

[Reply by Mr. Baines.—Whitewash the inside of the pits, on the bare bricks, which should not be plastered. Your Geraniums should be wintered in the pit nearest the boiler, which, as a rule, may be kept a little warmer in cold weather than the other, where the Calceolarias and Verbenas are, neither of which are of much use, except to take cuttings from towards the end of February, when they may be struck, either in a dung frame or in the pit nearest the boiler, which should then be kept continually warm for the purpose, the Geraniums being transferred to the other pit. In future, the Verbenas should be struck in a close cold frame in August, and the Calceolaria cuttings in the middle of October, also in a similar situa-

tion, just keeping the frost from them during the winter. The Geraniums will do better planted out next summer than plunged in the pots; peg the shoots down at planting time over the surface of the beds; they will then be less disposed to make too much growth. Propagate Lobelias, Heliotropes, Fuchsias, and Ageratums at the end of February for bedding out. Remove the bulbs from the beds just before the time has arrived for turning the bedding plants out; these latter will keep on blooming until frost cuts them off, consequently you will not require a third lot of flowering plants. The Gladioli, Tritomas, and similar plants will do much better by themselves. After the plants are turned out of the pits in spring, Cucumbers or Melons, or both, might be grown through the summer in the pits; or, if flowers were more in request, a few Fuchsias or pot varieties of Zonal Geraniums, with autumn-flowering Lilies. The different varieties of *L. lancifolium* will be the most useful, but, in a limited space, such as the pits afford, avoid over-crowding or attempting too much. The summer-house, unheated, will not be of much use in plant-culture in winter.]

IMPROVED CULTURE OF THE LILY OF THE VALLEY.

THE chief varieties of this charming plant are the common *Convallaria majalis*, *C. majalis flore pleno*, *C. majalis rubra*, and *C. majalis variegata*, the last a variety with golden striped leaves. Sweet, chaste, and beautiful as the Lily of the Valley was, and is, it remained in comparative obscurity till within the last few years. The roseate variety is neither common nor much liked, as the whiteness of the Lily of the Valley is one of the greatest of its charms. A coloured Lily of the Valley would hardly be deemed to smell as sweet; neither is the double variety any improvement, but the reverse; it gives a sort of stiffness to the flowers that robs them of their elegance. The golden leaves are not very constant, and if they were, could hardly compensate for the loss of the peculiar and charming green of the normal leaves. The mode by which the Lily of the Valley rose from comparative neglect to universal popularity is peculiar, and worth noting. It somehow entered into the mind of an enterprising person in the country that it would prove at once a pleasant and profitable speculation to carry some of it into the towns. No sooner thought than done. Numbers were collected, fringed with foliage, and dispatched to London and other centres of population; baskets and bunches were hawked along the streets, and the cry of fresh Lilies of the Valley from Woolpit, and other woods, became common in Shoreditch and the Strand. The sweet flowers quickly found their way into wealthy mansions, and in this, and other ways, such an insatiable demand was created for this charming flower as hardly all the modern resources of horticulture can suffice to meet. Fortunes are being built up on this humble plant; it employs thousands for several months in the year, in this and other countries; it is the most favoured of all the plants that come into Covent Garden Market, in the winter and spring months, and loaded with little green-tipped lamps of white, is, undeniably, a queen among flowers. As in many other cases, the demand has not only created a supply, but improved its quality, and extended its season. At one time, Lily of the Valley in plenty in May and June sufficed; now it is wanted from December to August. At first, too, any flowers and foliage were good enough, the perfume and the freshness of leaf and flower satisfied; now, flowers and leaves alike have to be developed to the uttermost, to satisfy the growing demand for quality in both.

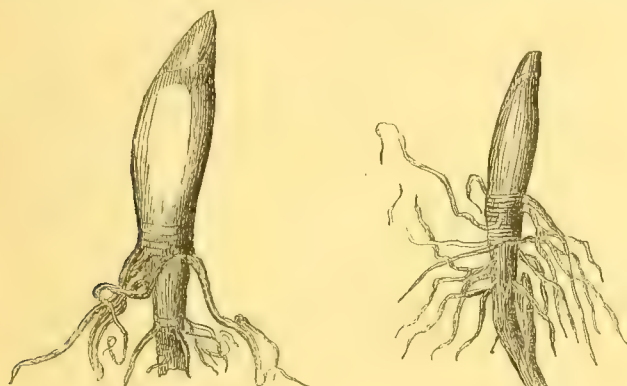
The resources of the plant, and the skill of the cultivator, have both been taxed to meet the new requirements. It will not do now to go to the native haunts of this sweet Lily, and dig up a barrow load of roots for forcing, as of old—neither is it enough that an old shady border in some out of the way place is devoted to its cultivation. The best modern modes of cultivating this plant is well told by Mr. F. Sander, seedsman of St. Albans, from whom we quote. To have it in perfection, it must have a bit of the richest soil England can furnish, and be liberally nurtured with water during dry weather. Continental growers seem to have first discerned how amenable the plant was to high cultivation. They set about growing it as they did Hyacinths and Tulips. By incessant sub-division, and annual or biennial planting in rich soil, they grow plants so fine, and strong as to be thought a superior, and quite different variety. It is, however, only the difference between a liberal and starving system of cultivation. It was this superior mode of treating the Lily of the Valley, and the continued demand, that originated the clump system. The crowns grew so strongly, and produced a series of other strong crowns around them, forming the large clumps that were transferred to the English and foreign markets just as they grew. The trade purchased, and growers gladly bought, and still buy these clumps; they are an immense improvement on the old plan of taking up patches of any and every sort from

wood, and border for forcing. It is, however, obvious that the clumps must contain a mixture of flowering crowns and leaf crowns, and so far there is a loss of space in forcing such; besides, the carriage of clumps is heavy, consequently expensive; but the system is not a bad one, especially for those who grow their own clumps. The single crown system is better, and will speedily supersede it. It is more certain, requires less space, and is therefore more economical; only the strongest flowering crowns are picked out, and each of them holds a flower in embryo, as shown in the annexed engraving.

The mode of cultivation, on the single crown system, also tends to develop the full strength of each crown. Plants are picked over annually or biennially; all the finest crowns being selected, and the others planted on fresh ground. By such means the entire energy and skill of the cultivator is directed to the development of individual excellence; the consequence is, that the crowns improve from year to year, and seem in a fair way of overtaking ordinary Asparagus heads. Space in heat is always costly in winter and early spring, and as a dozen or more single crowns may be flowered to perfection in a 4 or 5-inch pot, both space and heat are economised. These pots, fully furnished and in flower, are a sight to gladden the eyes, and cheer the hearts, of all lovers of beauty. The flowers stand up boldly above the foliage; and the Lily of the Valley, by the single crown system, has assuredly risen in the world. They should be potted rather firmly in rich soil, and placed in a gentle heat; it is better to keep them in a shady place until fairly started, when they may be gradually inured to the light. Some keep the plants in semi-darkness until the flowers are almost expanded; in that case there will be few or no leaves. For cut flowers that may not matter, but for plants in pots, the furnishing of vases, &c., the leaves are as essential as the flowers, and must either be developed by growing the plants in the light, or forcing clumps of common plants in boxes, specially for foliage; it may be well in private establishments to do this, if the crown system is adopted, lest a scarcity of foliage should occur. Some ladies like to see a thicket of leaves, studded over with the charming crystal flowers. It is well, too, with crowns, to excite root action rather in advance of the top, as it will be apparent to those familiar with the crowns and roots of the Lily of the Valley, that there cannot be a very large portion of root to each; but the root is the part always on the move for extension and reproduction, and, with a little genial treatment at starting, it will be sufficiently developed to sustain the flower-stem through its flowering period. More need hardly be added on either the crown or clump system; the former is now firmly established. Nearly all the beautiful plants that are sent to Covent Garden Market are the produce of single crowns. The system is founded on a true principle; the more all such plants as these are sub-divided the stronger the separate parts become. Multiplication of parts, if skilfully managed, leads to a concentration and augmentation of vital force. This is exactly what is wanted in such plants as Lily of the Valley, *Hoteia japonica*, Violets, *Myosotis*, and others used for forcing and furnishing. As to the exact mode of procedure, the plants should not be kept too long out of the ground; lay in the crowns, as soon as received, behind a north wall. They must not be tempted to start out of doors. Put the first batch into the house in November, and succeeding batches every fortnight, and continue according to the demand till March. Place them in a close warm atmosphere, with little or no light and abundance of moisture. The crowns will push up with a rush, and soon break into blossom in a temperature of 65° to 75°. Very early and late blooms are somewhat difficult to obtain. Crowns will require sharper forcing to start in November than in January, and may be assisted with warm water early in the season, and a temperature from 75° to 80°.

To have Lily of the Valley in July and August, various retarding expedients must be resorted to. Among the most dangerous is to keep the crowns in a cold cellar, without earth, as long as possible; another method is, to pot them up, and place them in an ice well, or some very cold place, until their natural time of flowering is over; but very early, or abnormally late flowers, are hardly worth the trouble, unless for special uses, such as bridal bouquets, &c. The crown system with ordinary care, and a little more skill than is needed to grow them in patches and clumps, will yield a capital supply of Lily of the Valley, from December till March. About the end of May, and through June, the Lily of the Valley flowers in the open air, and by choosing two or more situations, one of the coldest, and the other the hottest, the garden can command, the season out of doors may be very much extended. Another point remains to be noticed, the crown system indoors will compel its adoption in the open air. It will hardly do to reverse the usual order of things in the case of the Lily of the Valley, and have much finer forced flowers than those that come in in their natural season. The starving system with which the plant has been treated in the open air will no longer be tolerated; it must have liberal treatment, and well-grown clumps or crowns be bought in, or prepared at home, for the production of

fine strong flowers, either for cutting, or for the forming of beds, clumps, edgings, &c. For all these purposes, prepared crowns would create a new sensation, and give a fresh pleasure. In fact, there is hardly a limit to the useful purposes for which prepared crowns or clumps might be used. The tendency of the plant, if let alone, is to exhaust the soil and itself, by multiplication of parts. We must take advantage of this tendency, and turn it to productive account by sub-division, and liberal culture in bed and border, pleasure grounds, and home plantations. Flowering the old crowns oftener than once in pots, as recommended by some writers, seldom answers well, and, if adopted, of course develops into the clump system; and a mixture of very small and a few large crowns is created. It may answer fairly with some of the later batches, but all the earlier lots are exhausted, and will not pay for again growing in pots; hardly for planting in the open air. Some of the later plants may be kept and flowered again; they will yield a fair supply of flowers and plenty of leaves; but, to do even so much, the plant must not be neglected after flowering, but carefully nurtured and tended, until the leaves ripen and die down of themselves, and not be allowed to wither from neglect. Better plant them out, and buy fresh crowns for the early batches for forcing; for, with all the care, time, and labour, bestowed upon old crowns, with the consequent expense, which will probably exceed, by many times, the cost of



Flowering crown.

Leafy crown.

maiden crowns from the trade, they will seldom or never approach these, either in size or profusion of bloom. Therefore, force fresh crowns, and fill the borders, pleasure grounds, and woods, with the old ones.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Epidendrum piliferum.—This singular caulescent species bears dense terminal branched spikes of flowers, the sepals and petals of which are of a bright apple-green colour, the lip being white with singular purple markings. Although not showy from a florist's point of view, this species is sure to find many admirers.—B.

Oncidium euxanthinum.—This fine golden-lipped species is now flowering in Messrs. Veitch's Nursery at Chelsea. It looks intermediate between *O. bifolium* and the far finer *O. (varicosum) Rogersii*; the purple-spotted and fluted pseudo-bulbs resemble the former plant, while the larger flowers and more stately inflorescence remind one of the last named. It is a winter-blooming plant of rare excellence.—B.

Pittosporums.—Permit me to inform your correspondent "Clara" (see p. 430) that the following varieties of *Pittosporum* are all distinct and well worth cultivating, and will grow well in any ordinary good soil:—(1) *Pittosporum Tobira argenteo variegatum*; (2) *P. coriaceum*, a kind with beautiful thick leathery foliage of a deep dark green; (3) *P. undulatum*, foliage glaucous and wavy; (4) *P. eugenioides*, leaves light green and pointed; (5) *P. Mayi*, a sort with pretty silvery under-foliage; (6) *P. crassifolium*, valuable for its blossoms, which somewhat resemble those of the *Escallonia macrantha*; this kind is somewhat more delicate than the other varieties, and also scarce and difficult to procure, except from botanical collections.—E. G.

Vellozia cernulescens.—This is now coming into bloom in my hot-house. It is an exceedingly rare plant from Brazil, and it is also said to be common in the neighbourhood of Rio Janeiro. Its foliage resembles that of a small *Pandanus* with thorny edges, and the flowers are produced singly on the top of a slender stem, and somewhat resemble in shape those of one of the *Zephyranthes*, but have a more cupped throat. The white-flowered variety of this plant, *V. candida*, flowered for the first time about six years ago, at Glasnevin, where it had been raised by Dr. Moore from seeds sent to him direct from Brazil. It also seeded freely with him, and at one time he had a considerable number of young plants which he distributed to anyone who wished to possess them; but he recently informed me that he believed no one to whom he had sent them had been able to do anything with them, or even to keep them alive, and that he believed his own old plant to be again almost, if not quite, unique. He was anxiously hoping that it would soon flower and seed with him again. This curious and beautiful plant is well figured in the 91st volume of the *Botanical Magazine*. I shall be glad to hear from any of your correspondents if they have ever seen or heard of the *V. cernulescens*, which may not now be so rare as when the plate of the white variety, above referred to, appeared.—W. E. GUMBLETON, Belgrove, Queenstown, County Cork.

THE FLOWER GARDEN.

SHRUBBY CALCEOLARIAS.

ONE of the earliest and most effective of shrubby *Calceolarias* is that known as *aurea floribunda*, than which, as a yellow bedding plant, taking all properties into account—profusion and continuous flowering disposition, and its sturdy dwarf habit—nothing that previously existed or likely to follow will ever equal. There have been, as is well known to all who are conversant with garden matters, a number of other yellow *Calceolarias* raised from seed, as well as several of different colours, such as the orange Crown Prince of Orange, and their cultivation went on for some years, and without much difficulty, except in the driest parts of the kingdom in more than ordinarily hot seasons; but after a time they began to show symptoms of weakness by here and there a plant going off suddenly at the collar, until this defect became so aggravated as to assume the character of a disease, as virulent as the Potato blight, or that which now threatens to destroy the Tomato, both out of doors and under glass. This affection of *Calceolarias* was, from the first, most apparent in dry localities, where also the sub-soil was more than ordinarily porous, and naturally less able to retain any moisture after the surface soil became exhausted; but, as years went on, the disease, if such it is, became, in these dry situations, so bad, that virtually *Calceolarias* as bedding plants could not be grown. I noticed from the first that the more popular the variety, and, consequently, the further its propagation was pushed, the more it was affected. At that time, I was living in Cheshire, and the flower garden was, like the rest of the place, in an extremely dry situation, having a deep sandy sub-soil. Here, despite thorough and continuous watering, the *Calceolarias* became difficult to manage. A reserve stock was kept in readiness to take the place of such as died off through the season; but ultimately the plants died off in such numbers as to compel my relinquishing their cultivation altogether as bedding plants, under the ordinary system of propagation. When we see a plant that has at one time conformed to a particular system of culture, and then, without any alteration in its general treatment or other external conditions as to its existence, refuse to grow, it is advisable to ask ourselves a few questions—or, in other words, look for the causes, which either must be traceable to the advent of some malady hitherto non-existent, or the treatment the plant has received at our hands having been such as gradually to weaken its constitution, and render it a prey to disease. Impressed with this general conviction, I approached the subject, first considering the nature of the plant. These bedding *Calceolarias* have directly descended from evergreen shrubs, that even under cultivation will assume the dimensions and get as hard in their wood as a Gooseberry bush; they are also, from their natural habitat (Chili), necessarily moisture-loving plants. In thinking over these natural conditions of the shrubby *Calceolarias*, it occurred to me that, in the numbers of plants which we cultivate for different purposes, few are subject to treatment so opposed to the natural conditions under which they exist as these. Used as they have been for bedding, their general treatment, especially the condition of the plants from which the cuttings are taken year after year, is different in every way from plants which in their natural state would be sufficiently mature to take cuttings from; and, therefore, plants that in themselves have never attained a condition comparatively beyond a mere sappy shoot—or in other words, never have had time to attain their natural mature hard-wood state—are not in a fit state to furnish cuttings. This view was still further confirmed by noticing the difference that existed between the plants grown in pots during the first year after being struck, and such as had been so kept until they had time to develop and solidify their parts by age. As is well known by those who grow the most useful decorative yellow variety, *aurea floribunda*, that, if ever it gets neglected for water during the first season, especially in the spring whilst it is young, it is very liable to die off suddenly through the effects; yet the same variety, if it lived over the first year so as to get its main stem and the base of the branches solidified to something like their natural condition, would stand a great deal more rough treatment, even if it suffered so much for want of water as to cause its leaves to flag. I happened to have some plants that had been used for conservatory decoration for five or six years, being yearly pruned back like a *Pelargonium* (but not so closely), and a portion of the soil removed, and then re-potted; the plants never occupied pots above 12 inches in diameter, yet they used to flower profusely most of the summer. It struck me that cuttings taken from plants in the above condition might probably be stronger in constitution than such as were, each succeeding year, taken from plants that themselves had not had a separate existence long enough to get any portion of their wood matured in a way natural to the plant—in other words, a continuous reproduction from cuttings that were the produce of soft growth. With this view I struck a number of plants from the soft points of

these hard woody plants, and found them, although not altogether disease-proof, yet far less subject to it, either in the flower garden, or their early existence as pot plants. All this, of course, does away with the variety as a bedder; for, where largely grown, it would be out of the question to procure sufficient cuttings in this way. The experiment simply goes to prove that cuttings taken from plants old enough to have their wood fully developed and matured will, in the case of this *Calceolaria*, make stronger plants, better able to withstand treatment somewhat contrary to their natural requirements; the first of which undoubtedly is a plentiful supply of water, especially in their younger state, of which a knowledge of the *Calceolaria*'s native habitat is sufficient to convince anyone who has studied the laws which govern vegetable life in respect to the requirements of water. Cultivation through successive generation of most plants will go far to alter their general appearance—even so far as to make their origin scarcely recognisable. Yet there is one essential which they never lose—that is, their requirements in the quantity of water, especially at the root, and to a less degree in the atmosphere. Of this we may see proofs innumerable around us on all sides. Independent of its use for bedding purposes in such localities as it will succeed in without an unreasonable amount of attention, *aurea floribunda* is a first-rate plant for general decoration, grown in large or small pots for conservatories and similar places. The great use of subjects of this description, especially grown in, say, 6-inch pots, is that they can be stood about where there would be a hesitation in placing things of greater individual value. If well attended to, the plant will keep on flowering all the summer, but in this young state it must never be allowed to suffer for want of water. It is largely grown for Covent Garden Market; its numbers being only limited by the cuttings available. They are treated in the ordinary way—struck in cold frames, and in such kept through the winter quite cool, but well protected from frost, with litter and mats. The plants are encouraged to grow, and removed to 6-inch pots early in the spring, then pushed along by keeping moderately close, so as to get them early into flower, stout, and bushy. One thing that makes them sought after is, they supply a colour not over-plentiful in pot plants.

T. BAINES.

COLOURS OF FLOWERS.

As, in "Notes of the Week" (see p. 422), you quote a letter from *Nature* on this subject, without intimating that it contains merely the opinion of a correspondent, you will, perhaps, kindly allow me to call attention to the very similar replies to that letter, by myself and Mr. T. Comber respectively, in the subsequent number of that journal. I venture to repeat the arguments contained in them:—1. The greater size and brilliancy attained by cultivated flowers is due, in most cases, to intentional artificial selection by the cultivator intensifying slight variations. Where cultivation affects the first cultivated individual, Mr. Darwin thinks the variation may originate, as suggested by Knight, in the change or excess of food ("Origin of Species," chap. i.). 2. Double flowers, as pointed out by Mr. Thomas Meehan, are of various origin, some only arising from metamorphosis of stamens or pistils, and being consequently more or less barren; others are due to the development of normally suppressed intercalary whorls, or possibly to chorisism. Either excess or lack of food predisposes to disease; so that the abortion of organs fitted for the exhausting reproductive process may, perhaps, be caused by weakness, or by an excessive growth of parenchyma arising from over-nutrition. Double flowers are not permanent in a state of nature; though they might be so, as Mr. Darwin mentions ("Origin of Species," chap. viii.), varieties of the annual *Stock*, which produce both double, sterile, and single fertile seedlings, fairly comparable with the fertile and neuter forms of social insects. Artificial selection is the main cause of double flowers. 3. The abortive flowers of the Guelder Rose and Hydrangea, as they grow naturally, are confined to the outer part of the corymbs, and serve the same purpose as the ray of *Compositæ* (which in some species, *Centaurea Cyanus* for instance, consists of neuter florets) and the highly-coloured bracts of some plants, viz., to attract insects to the fertile flowers they surround. The large corollas originate, as shown by Dr. Ogle (*Popular Science Review*, April, 1870), according to the law of balancement of growth. Garden forms wholly sterile are the result of art. 4. The beauty of fruits, as shown by Prof. Hildebrand and Mr. Darwin ("Origin of Species," chap. vi.), "serves merely as a guide to birds and beasts, in order that the fruit may be devoured and the seeds disseminated." 5. "We meet very commonly with gaily-coloured chemical products, essentially connected with the normal processes of development (the chlorophyll of most non-parasitic plants, the rose pigments of *Floridæ*, the many-coloured Lichens and Fungi), or decomposition (the tints of autumn leaves), and originating from venomous infection by insects (red galls). These colours appear to be merely an accidental quality

of the chemical products . . . natural selection is without any influence as to colours, unless animals are attracted or repelled by them." (Hermann Müller, *Nature*, vol. ix., p. 460).

G. S. BOULGER.

Singular properties of the Autumnal Crocus (*Colchicum autumnale*).—The strong resemblance of the *Colchicum autumnale* to the *Crocus* family, though it does not belong to it generically, will cause that popular name to cling to it, in preference to that of *Colchicum*. This plant has been recently found to possess curious properties which our readers will be interested to hear of, and to experiment on. The flowers, without absolute contact, are found to communicate a bright saffron-yellow to the fingers when held over the flowers, at a certain distance, and the colour so imparted remains permanently established for a considerable time, in spite of washing. The entire face, held over the flowers at a certain period of their development, assumes a jaundiced yellow of very pronounced character, upon which soap and water have no effect, but it generally disappears after a few hours, though, in some instances it lasts much longer. The near proximity to these flowers affects also the palate—a slight but astringent bitter taste being very perceptible. Some constitutions are so sensitive to the influences given off by this plant that the ends of the fingers become perfectly numbed by actual contact with the flowers. But these influences rapidly disappear when the inflorescence has passed its zenith. As is well known, the flowers appear in August and September, without leaves, the foliage having developed itself in spring, and died down before the appearance of the flowers. The spring leaves also appear to possess very strong properties, as well as the autumnal flowers; and, in the *Pharmaceutical Journal* of this month there is a short article describing the injurious effects of this Grass-like foliage on cattle, who nevertheless eat it greedily when the early spring Grass is late and poor. Some, it is stated, have died of the effects of this hitherto unsuspected poison.—WESTBOURNE.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Ivy on Cemented Walls.—If your Cumberland correspondent has cemented or rough-casted his house, and still wishes it covered with Ivy, let him put a light frame of wooden laths, crossed diagonally in the form of lattice work, round it. He can, in that case, keep the Ivy off the wall, which under some circumstances is desirable.—J. MATTHEWS, *Ivy Cottage, Weston-super-Mare*.

Artificial Rock-work at Otlands Park.—You will much oblige me by correcting an error in "H. N. H.'s" description (see p. 439) of my artificial rocks. They were not built by Mr. Marshall, of Liverpool, but by Mr. John Hancock, of Newcastle-on-Tyne.—W. C. HEWITSON.

Spring Flowers in Autumn.—The mildness of the weather has produced a spring-like aspect in many parts of the country. At Cudham, Primroses are in full bloom, the banks are covered with Violets, and the wild Briars are blossoming, which is most unusual in the month of November. The Holly trees are laden with berries this season.

Tree Carnations.—Some of the new kinds of Tree Carnations, as they are somewhat incorrectly called, are very beautiful. The varieties named *Gourdant*, *Comtesse de Strum*, *Plure d'Or*, *Oriflamme*, and *Mont d'Or*, all praised by that successful Carnation grower, M. Alegatiere, should be in every collection of such plants.—H.

Viper's Bugloss.—Another weed is recommended as a fine garden flower by a correspondent of the *Revue Horticole* (Dr. E. Solin), who describes, in a very interesting letter to the editor, how much he had been struck in travelling between Paris and Corbeil by a fitful glimpse, in a suburban garden, of a mass of beautiful deep blue flowers shot with rose-colour. An old gentleman opposite to him, perceiving his admiration, said, "Yes, they are very beautiful. I have admired them in their season for more than fifty years." "Yes, yes, I can well understand that, Sir," said Dr. Solin, "but can you tell me the name of the plant?" "I can do that, to," said the old man, "for I am a little bit of a botanist; it is a lovely weed—*Echium vulgare*."

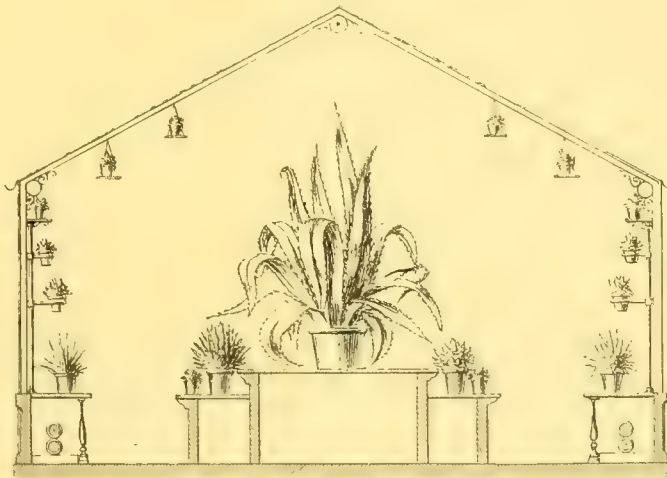
An Autumn and Winter Bed.—I have just seen a bed of foliage and flowering plants, which will last in good condition nearly all the winter, provided the weather is mild. The bed is circular in shape, and margined with a belt of *Cerastium Biebersteinii* fully a foot in width. Inside this is a broad row or rather double row of *Viola Imperial Blue*, then a row of *Rambusa Fortunei variegata*, followed by a broad band of purple-leaved Beet, the centre being a small *Yucca gloriosa* set on a carpet of Golden Feather. This bed is fully equal to anything I have seen this summer, and, being in a sheltered cosy sunny little nook, there is little danger of its beauty being entirely destroyed for some time to come.—B.

Standard Heliotropes.—I am prompted by the article on *Heliotropes* (see p. 339) to ask why they are not cultivated as standards. I never saw them grown in this way except by myself. I have them on 3 and 4 feet stems, with nice heads. By shaking off the old soil in spring, and re-potting in fresh loam and rotten manure, at the same time closely pruning the head, they make fine plants in a few weeks, and continue to bloom for several months if occasionally treated with liquid manure. Probably there are but few of the varieties suited for this purpose, the chief aim of the hybridiser being dwarfness; mine are the old *Heliotropium peruvianum*. I know of few things more grateful to the sense of smell than a walk between a double row of standard *Heliotropes* about one's own height in full bloom. We thus enjoy the delicious fragrance without either stooping or gathering the flowers.—J. M., *Hawkchurch, near Lancaster, Devon*.

GARDEN STRUCTURES.

NOVEL MODE OF ARRANGING SUCCULENTS.

MR. PEACOCK'S Agave-house is a span-roofed structure, 40 feet in length and 20 feet in width, and contains a central shelf 10 feet in width and a side shelf 2 feet in width. On the sides are three tiers of brackets made of gas pipe in such a way that the pot is held in position by its rim, and so arranged that the drip from each plant misses the one below it. The brackets can be pushed backwards or forwards at pleasure by means of a screw, or, if not required, removed altogether; above these are shelves. This house contains about 500 specimen Agaves, and on the shelves are quantities of newly-imported ones, some of which promise to be new. Next come two half-span houses, one of which is filled with mixed foliage and flowering stove plants and a collection of Bromeliaceous plants, one end and the back wall being covered with Hoyas, and the other, or lightest, end with plants of *Nepenthes gracilis* major, now literally covered with pitchers. A house opposite this one is filled with Camellias. Next come two span-roofed houses, one of which contains a fine collection of the choicest sorts of Cacti, among which are some unique plants of their respective kinds. The Aloe-house is entirely devoted to Aloes, Gasterias, and Haworthias, of all of which there are very complete collections. Of a similar pair of houses, one is devoted to Euphorbias, Crassulas, Sempervivums, and Echeverias, conspicuous among which is the fine kind called *E. Peacockii*. This house also contains a collection of Yuccas, some of which are unique in their way, likewise *Dasyliiriums*, and on the shelf some fine *Stapelias*, the opposite house being devoted to miscellaneous greenhouse plants. In addition to these is a pair of low span-roofed Orchid-houses, lately erected; and a span-roofed house, running north and south, 40 feet by 18 feet, divided into three compartments, the first being occupied by greenhouse flowering plants, the second by Orchids, and the third is a small propagating house. The stocking of these houses with plants has only been the work of three years and a half; and yet the collection, which is managed with great skill by Mr. Croucher, is one of the best in the country, and the admiration of all who inspect it. C. J.



Section of Mr. Peacock's Agave-house.

Materials for Glass-houses.—I am glad to see Mr. Baines's remarks (see p. 416), directing attention to the want of durability in modern hot-houses. I quite agree with him that red pine, and the redder or more resinous kind (or pitch pine, as it is called), is the proper timber for hot-house building. Pitch pine, owing to the resin it contains, is specially adapted for wall-plates, gutter-beams, stage-feet, and all parts exposed to the action of water. As to iron as a substitute for wood in horticultural buildings, it is best suited for ornamental conservatories and curved roofs, but is still too expensive for ordinary use. The principal cause of the great revolution that has taken place in hot-house building is the desire in the horticultural world for something new; it need not be meritorious, if it is only new; or even an old system under a new name has been known to give great satisfaction. A "tubular rib," a "patent curved structure," a "patent diaphragm," or a new system of glazing, each with a host of testimonials, showing it to be the best, are all acceptable to modern horticulturists. But the article must be cheap. A gentleman who intends erecting hot-houses, asks estimates from a number of builders, looks for the lowest offer, and accepts it, without taking into consideration either the quantity or quality of the work he is to get. A "Judicious combination of wood, iron, and glass for £6!" is what is wanted by many would-be horti-

culturists. If gentlemen, before agreeing with any builder, would go themselves, or send their gardeners to see houses already built by good firms, they would be better able to judge of the relative value of such offers. It may be interesting to mention that there are still one or two old-established firms in the country who build hot-houses of red and pitch pine only, all materials and workmanship being of the best kind, and the houses constructed with a view to durability, as well as to the admission of the greatest possible amount of light, and having the latest improvements in ventilation and heating. But what chance have such old-fashioned qualifications as efficiency and durability, against a dazzling throng of new patented inventions?—J. B., jun.

THE GREAT GARDEN AT HAMMA, NEAR ALGIERS.

THIS remarkable garden, founded by the French Government, a few years after the conquest of Algiers, is scarcely so well known as it ought to be in England. It was the work of M. Hardy, who has held the office of curator-in-chief ever since its creation—which was mainly effected by his own intelligent perseverance. The botanical riches of the garden of Hamma (placed, as it is, in a medium climate, where the plants of Europe and those of the tropics flourish with almost equal luxuriance, side by side), exceed, perhaps, those of any other botanical garden in the world, not even excepting that of Calcutta. It appears, however, that though so successful under the direct management of the French Government and the able directorship of the enterprising official, M. Hardy, that it is about to be leased to an Algerian company for a period of forty-nine years. MM. Talabot and Frémy, are at the head of this company; M. Talabot, in addition to his reputation as an eminent botanist, joined to that of an enthusiastic amateur horticulturist, is doubtless a fitting person for such a position, and under his energetic management the utility of the establishment will, as it should seem, acquire a great extension. The garden will be continuously enriched by the acquisition of new and precious plants, and the sale of such plants as may be desired by cultivators, either agricultural or horticultural, will be greatly facilitated, as a whole string of petty official regulations, often excessively irksome and vexatious, will be at once got rid of; while the large views of M. Talabot will be ably supplemented by the invaluable aid of M. Rivière, who has been appointed managing director. Nevertheless, M. Carrière, in the *Revue Horticole*, cannot help expressing fears that the future of the noble garden at Hamma, may not, in private hands, be as secure as it would have been had it remained an appanage of the Algerian Government. Others may eventually succeed to the management of the affairs of the company who may prefer money to science; and, should that be the case, all the sacrifices that have been made during the last thirty years may turn out to have been wasted.

The Symbology of Flowers and Plants.—This has been in all preceding ages a popular form of superstition, and in some parts still continues to be so. On this subject a conference was assembled by M. Von Peryes, of Vienna, at which the popular beliefs and legends connected with the vegetable kingdom, and their probable origin and history, were discussed in a lively and piquant manner. But it is not necessary to go to Austria for examples of that kind. Who has not known old people in remote places, who have firmly believed that a tuft of Housleek on the roof is sure to bring "good luck," if not neglected; and that if washed off by heavy rain, or blown away in a gale, ill luck is sure to follow? And some such unsophisticated beings feel sure that a tuft of a certain kind of Grass on the house-top is a sure preservative against "thunderbolts;" many among such still prefer the remedies distilled from simple herbs, collected by some old shepherd, to the very best "medical advice."

THE KITCHEN GARDEN.

CULTURE OF BRUSSELS SPROUTS.

THE Brussels Sprout is undoubtedly one of the best and hardiest of our Winter Greens, and ought to be found in every cottage garden in the country. Although nearly related to the Savoy, it is superior to that kind of Cabbage both in flavour and productiveness, and is at least quite as hardy. In the severe winter of 1860-61 I saw several instances where the Savoy had succumbed to the severity of the weather, while the Brussels Sprout had withstood it with comparative impunity. There are several varieties of it named in seedsmen's catalogues, but I think it is at least doubtful if they are really distinct. No doubt much has, and may still be, done to improve it by persistently carrying out a system of selecting seed from the best and most prolific plants only, and I do not know any vegetable that will better repay any extra care or trouble incurred in carrying this matter out in a thoroughly practical manner. In the north and cold wet districts generally, to have Brussels Sprouts in season from October to March, the first sowing should be made in October. Sow thinly on a warm south border, and when the plants come up thin them out to prevent them drawing each other up weakly; the thinnings may, if necessary, be pricked out. In October all seeds of the Cabbage tribe vegetate with the greatest certainty, and there is a strength and vigour about the young plants that is often absent from those raised from seeds sown early in spring. Whenever circumstances have prevented autumn sowing it is highly desirable, if the means are at hand, to sow a few seeds in a box in some spare corner under glass early in February, not necessarily in a warm house, as the plants will come up weakly, but in some cool airy structure, where they can be easily protected from the attacks of the many enemies to which early sown seeds in the open air are liable. There is, I think, no question that if Brussels Sprouts were sown earlier, and had, consequently, a longer time for growth, the result would be satisfactory. Sow again in the open air in March and also in April for use in spring. The first plantation should be made early in May, in order to give the plants time to attain their fullest development by October or November, and as they should, when full grown, be at least a yard high and stout in proportion, more space should be allotted to them than will be required for later crops; 3 feet will not be too much space between the rows, and 2 feet plant from plant. The demand must regulate the supply, but other plantations may be made at intervals when land becomes vacant till the middle, or, in warm situations, to the end of July, after which time—except, for instance, in a season like the present—they cannot be expected to attain a profitable size. In the matter of soil, Brussels Sprouts are not at all particular, provided it is well and deeply cultivated and fairly manured. Poor sandy soil will require a heavy dressing of good manure, whilst lime and burnt clay may be beneficially applied to cold clayey land in preference to rank manure just previous to planting, which would have a tendency to produce gross open sprouts instead of the close medium-sized buttons so much appreciated in the kitchen. Plant the successional crops as far as possible in different aspects—even altering the direction of the rows will make some difference; and a few should, if possible, be planted on the north side of a wall, fence, or screen of some kind. Frequent stirrings of the soil, general clean culture, and removing decaying leaves add to their growth and cleanly appearance, and ought to be insisted on. As regards earthing up the stems, I have grown them, both with and without that assistance, with much about the same result. In windy places, I should certainly recommend earthing up, in order to enable them to resist wind power; but, as Brussels Sprouts, unlike Cabbage or Broccoli, bear all up the stems, it is not desirable to bury them to any great depth beyond giving them necessary support. Do not cut out the Cabbage-like heart from the centre of the plant till the crop is fit for gathering; and, if a really good plant or two can be spared, save your own seed. The London market gardeners prefer, as a rule, stems of medium length, from which they think they get the hardest and best sprouts; with them, however, Brussels Sprouts are chiefly grown as catch-crops.

E. HOBDAV.

CULTURE OF BROAD BEANS.

THE Broad Beans, which are usually seen in Covent Garden and other London markets, come chiefly out of what are called the home counties. About Acton, and one or two other places near London, a few are grown for early purposes, convenience of cropping, or as a rotation crop; but otherwise they are not grown to any great extent close to London. The Early Mazagan, Broad Windsor, Green Broad Windsor, and the Long Pod are the sorts usually cultivated; and, as they are not a very remunerative crop, considering the great labour incurred in sowing, growing, picking, packing, and carting, before they are marketed, valuable ground is not occupied with them. Dry and light soils, in warm positions, are suitable for early sowings, which are commonly confined to the Early Mazagan, and made in January, and again in February, in rows 2½ feet apart, running across or obliquely in the borders or quarters. Large sowings of the Long Pod are made in the latter half of February and in March, in rows equally distant as for Mazagans, but with less particularity as regards the way in which they run, the position of the quarter, or the quality of the soil which they occupy. The Broad Windsor, which form the principal crop, are generally sown in March. Although the common Broad Windsor constitutes the bulk of the main crop, yet the Green Broad Windsor is usually preferred by consumers when they get accustomed to it. In proof of this, a market-gardener at Mitcham informed me that he generally grew several acres of the green sort; but one year, having got by mistake seeds of the ordinary Broad Windsor instead, he sowed them. When reaping time came his customers, one and all, complained of the inferiority of his Beans that year compared with those of former seasons. Ever since then, therefore, he has carefully avoided the objectionable kind, and has only grown the sort most appreciated, viz., the Broad Green Windsor. There are no important particulars connected with Bean culture, beyond the routine of rigid cleanliness, and nipping off the points of the haulm as soon as a fair crop of flowers is produced, in order to stimulate the pods and produce earliness. Beans are sometimes sown at the distances above named on ground occupied with Radish beds, with the progress of which they interfere but little, as the Radishes are too small to injure the Beans, and they are sure to be removed before the latter can be in any way injurious to them. Early Stone Turnips are not unfrequently sown between the rows of Beans, and such spaces are also sometimes occupied with Cos Lettuces, Cabbages, Cauliflowers, or Brussels Sprouts in every second row, Lettuces being in the intervening one. The Lettuces, being soon ready for market, are removed, and thus make a good clearance for a free circulation of air, and a passage from which the Beans off two rows can be easily gathered. Market gardeners seldom save their own seeds, as they find it cheaper in the end to buy them. When seeds are to be saved, the haulm is allowed to occupy the ground a few weeks longer than it otherwise would do, and thus curtails the chance of cropping it with Savoys, late Sprouts, or Cauliflowers, early Endive, and a few other crops. As soon, therefore, as the Beans have entirely yielded their crop, the haulm is pulled up and carted to the manure heap. The ground is then dug, or ploughed, or deeply worked without being manured, and a crop of Endive or white Cos Lettuce is planted therein for use in October, or Savoys, Brussels Sprouts, Cauliflower, Broccoli, autumn Radishes, or transplanted Leeks, may be planted in it; or, if it has been manured and deeply dug, it will be in good condition for a fresh Strawberry plantation. Some growers, however, grow Beans largely for seedling purposes only, and in this case about one-half or two-thirds of the pods, consisting of the earliest formed, are picked off for marketing in a green or usable condition, the remainder being left to ripen. If all were left, the seeds would not be so large, plump, or heavy as when the pods are thus thinned out. When the Beans have become well matured the haulm is pulled up, and laid on its side to dry for the remainder of the day, if fine; it is then tied into bundles, dried thoroughly, brought home, and either thrashed at once, or kept under cover or in a thatched stack until a more convenient season for thrashing out the seeds occurs. Coleworts form the chief succession to the seed Bean crop. Covent Garden Market is supplied with fresh Broad Beans from Algiers as early as April, and it is astonishing to see how well they bear their sea passage, and maintain their freshness until they arrive in London. France then furnishes supplies soon afterwards, and maintains them until home-grown produce comes in.

F.

Short v. Long Cucumbers.—Duke of Edinburgh excels all that I have tested as regards length, fruit of it having been grown to the extraordinary length of 10 inches. I have myself had it 3½ inches. It somewhat resembles the Marquis of Lorne, but is, in my opinion, an improvement on the Marquis. I have always found that long Cucumbers require more heat than those of moderate length,

and the latter are the most useful. When grown to the length just indicated, it will be found that only one fruit can be grown on a plant at a time, and that such long varieties can only just be kept alive during the dull months of winter, while other sorts, such as Telegraph and Hedsor Prolific can always be depended on to grow and fruit well. Telegraph can be cut from 18 to 24 inches, while Hedsor seldom exceeds 14 inches. As regards prolificacy, there is not much difference between them. Telegraph, in my opinion, will outlive such sorts as Duke of Edinburgh, Marquis of Lorne, Blue Gown, and others. Again, few sorts keep their true character as well as Telegraph.—D. S. GILLET, *Court Garden, Great Marlow.*

Cucumbers in Russia.—On my way home from the fair [of Nijni-Novgorod] (says a correspondent of the *Daily News*), I was again struck with what I had often remarked before, viz., the profusion of Water Melons and Cucumbers, which were being everywhere offered for sale. Pyramids of Melons and Water Melons, like cannon-balls in an arsenal, were heaped up in every direction, and as for Cucumbers, you couldn't help fancying that a plague of Cucumbers, like Locusts, had descended upon the earth. All along the Volga, from Astrakhan to Nijni, the whole population seemed engaged in eating Water Melons. Their price being three sopeks, equivalent to one penny, put them within the reach of even the moderately wealthy. At every wood station that we stopped at, the Water Melon and its rival, the Sunflower, were the subject of a lively traffic. Saratov seemed to be the head-quarters of this latter fruit, but we had outposts all along the line. But if the Water Melon and the Sunflower are luxuries and pastimes, the Cucumber is a law and a necessity. You never see a Russian peasant at dinner but you see the lump of black bread and the Cucumber. A moujik's dinner may be said to consist of *x* plus Cucumber. The *x* will consist of his favourite Cabbage soup (*schtchi*), with or without meat in it, and sometimes in addition to it the equally famous grit porridge (*kascha*). Sometimes the *kascha* is without *schtchi*, and sometimes the *schtchi* is without the *kascha*, but whether in separation or combination, the Cucumber, at least, is always there; and should *x* equal zero, as I am afraid it sometimes does, then the ever-faithful Cucumber does duty for all the rest. Cucumber seems certainly a singular dish to be so national in a country with a climate like Russia's. It is the last that one would select *à priori* for the post; but this is only one of a great many singularities one meets with. The Cucumber costs the thirtieth part of a penny about the Volga; perhaps this fact will explain the anomaly.

THE ARBORETUM.

PLANTING FOR AUTUMNAL EFFECTS.

THE beauties of plant life in autumn may be fewer than such as herald the spring, yet they are none the less acceptable or worthy of our attentive observation. Nay, rather should we do all that is possible to lengthen and increase their effects; for all that can be done to make rural scenery in autumn effective, is so much done to reduce the length of dreary winter. Yet, even in the immediate vicinity of the mansion or villa, we find little attempted in the way of planting those trees and shrubs, which, in the closing days of the leaf's existence, display shades of colour so rich and profusely varied, as to be unequalled at any other season. Why such should be the case is the more remarkable, considering that while planting for autumn effect, we may leave the spring beauties undiminished. All that is required is to keep in view the double object of autumn as well as spring and summer colouring. This is not to be arrived at alone by selecting those deciduous trees and shrubs, which in the closing stages of their annual leafage, are adorned in shades such as the greatest painters can only feebly portray, but by a judicious selection, as well, of those that will retain to the latest period their healthy summer's green. The rage that has existed for Coniferous and allied trees during the last thirty years, has had something to do with the mistakes that have been committed, and are still being made in too many directions. The smaller and more confined the grounds, the more necessary is it to rely upon the effects produced within a prescribed space without any assistance from more distant objects, as in the case of a large domain, where such generally exist to aid the immediate surroundings. Yet even when Coniferous plants are largely grown in collections, as where a Pinetum is planted comprising most of the leading varieties, the space instead of being entirely occupied by Coniferae and Taxaceae, might be the better for a few such trees as Scarlet Oak, the leaves of which are so finely coloured; and Hornbeam, with its equally fine pale golden garb, habit, and colour, which contrast so well with the sombre tints of Coniferous trees. In the spring the Purple Beech is equally effective, as also the Red Acer. These are only a few of what might with advantage be introduced into the company of a Pinetum; the simple necessity being that

sufficient forethought is used in planting them in such positions, relatively to the other trees, as to produce the most telling effects, and at such distances as neither to interfere with, nor in themselves be interfered with, by those with which they are associated. This latter point is one that it might be supposed unnecessary to allude to, yet in the case of a great deal of planting, it would appear otherwise; for, even with trees intended to stand permanently, we often see them planted, not with a view to the room they will ultimately occupy, but so as to look best for the time being, or under forgetfulness that they ever would get bigger after planting. No greater error can be committed than this. What can be more provoking than to see a couple of trees, alike valuable in themselves, as also for the position they occupy, standing in such close proximity as to render the destruction of one of them inevitable? A short time since I saw a broad walk surrounding a Pinetum, with a row of noble Deodaras on each side, planted in opposite pairs, and so near that even the doing away with the walk on which they had far encroached, would only for a few years delay the removal of one-half of them. This mistake was evidently traceable to the desire of producing immediate effect by the position in which they stood in relation to the walk when first planted; and this is only one instance in hundreds that may be seen wherever we happen to turn.

There is another matter of which I would remind those who, with little discrimination, place reliance upon Coniferous trees for permanent effect in places where their destruction would cause a serious blank. It is fourteen years since the memorable frost of 1860-61 caused such havoc amongst numbers of such trees, which seemed likely, from the countries and elevations they came from, to stand our severest winters. Yet great numbers of them have since been planted, although we are pretty certain, sooner or later, to have a recurrence of such a frost; and the longer it is before it comes the greater gaps it is likely to make. In park planting little has been done in most instances to produce autumnal or spring effects, compared with what it is possible to accomplish by planting in the foreground such trees and shrubs as produce the best autumn tints. Where the land is naturally flat, it is in the foreground principally that this colouring can be introduced; not so where it has sharp undulations or gradually slopes towards the eye. In such situations much may be done by planting on the most elevated spots Oaks, Hornbeam, and Elm; these are always effective, but more particularly so when interspersed amongst considerable breadths of Pines. So associated, their effects are beautiful. Recently a good deal has been said about the effects produced by planting broad masses together of some particular tree in juxtaposition with similar breadths of others, each distinct in character, much after the fashion of a patchwork counterpane, made with extraordinarily large pieces. I feel the greatest reluctance in using the term unnatural, for it is the fancied vantage ground that every garden grumbler perches himself upon when he attempts to carry his argument out of the reach of ordinary mortals; yet the whole routine of cultivation in connection with the vegetable kingdom is necessarily so different from, and in most cases unavoidably opposite to, Nature's workings, that to instance Nature's own doings as a type for us to follow in these matters is simply an absurdity. Where the land forms a succession of hill and valley, with rugged bluffs and low sheltered spots, it is quite possible to plant varieties of trees in masses with good effect, provided very great care is taken that the outlines are skilfully managed. In such situations, fine effects of colour can be produced for all times of the year, as anyone may judge who has seen some of the work of the late Mr. J. C. Loudon on the high ground leading from the village of Cheadle to Alton Towers, the seat of the Earl of Shrewsbury. Yet it is in the immediate vicinity of the mansion—in the dressed grounds, more properly speaking—that the finest combination of spring and especially autumn leaf-colouring can be produced. Here, with judicious planting, the different shades of green, brown, yellow, and red can be so intermixed as to produce the best effects. What a splendid background the *Ailantus grandulosa* makes for the deep red leaves of the snowy *Mespilus*, which is one of the first to don its autumn livery, almost making us regret that it is not so coloured all the season; this, combined with its profuse sheet of spring inflorescence, makes it one of the best moderate-sized flowering trees that can be put into the shrubbery. And yet how many acres of ornamental planting is now done without a single *Mespilus* being introduced. As to the *Ailantus*, it seems strange that this most ornamental tree is not more generally planted; it has everything to recommend it, being a good grower, it is very distinct in foliage, which it wears until late in the season, and never affected by insects. Here, again, the autumn colours of the scarlet Oak and the Hornbeam are indispensable, backed up with, or near to *Pinus austriaca* and *P. Cembra*, with any of the varieties of Spruce or other dense green-foliage tree. The Spanish Chestnut is also distinctly coloured later on. As a plant for affording intense red

colouring early in autumn, nothing surpasses the Virginian Creeper (*Ampelopsis hederacea*), trained to stout 10 or 12-foot iron rods with double-clewed feet inserted in the ground, so as to resist the wind; dotted about the shrubbery, it has a fine effect whilst green early in the season, and doubly so in its autumn garb. So grown, these dense columns not only form a beautiful contrast to other things in colour, but also in form, to the broad sky line of such trees as the Cedar of Lebanon. One of the most beautiful and intensely coloured-leaved plants, as well as coming in when most of the others are fallen and gone, is the Guelder Rose (*Viburnum Opulus*). It is also well known as one of our most effective spring-flowering shrubs; but it is in the autumn, when it is more alone, as affording colour, that it is so valuable; its miniature Vine-like leaves are then seen to perfection; it also retains them longer in their highly-coloured state than most trees do. It is deserving to be much more extensively planted than it generally is. At intervals of a score yards on the front of the shrubbery it has a charming effect, combined with the dark foliage of evergreens. The above are a few of the trees and shrubs that, when used judiciously, are most effective, attracting our attention when it is less divided than in the gay summer-time's profusion of colours, which makes us more indifferent to the merits of individual plants through the numbers we then have to choose from.—*Field*.

PRUNING ORNAMENTAL TREES.

If you want bushes, not trees, do not prune. If you want trees, not bushes, let them be trained to a single stem. This remark applies, however, more to deciduous trees, than to Conifers. Most of the latter only push out lateral branches from the lowest part of the stem, and are thus feathered to the ground, without throwing up more than one main trunk. But deciduous trees, especially where they have sufficient room, frequently throw up two or three stems which rival each other, or strong shoots from the lower part of the stems, which become large branches in time. If the rival stems are not all excised but one, and if the branches springing low from that stem are not lopped off, no tree will then be formed, but only a large bush. Our remarks on pruning apply only to ornamental trees, and are directed purely to ornamental ends. The pruning of fruit trees is based on quite different principles, and is directed towards securing the largest quantity and best quality of fruit, quite irrespective of elegance of appearance. The main objects to be secured by pruning are—first, to develop a handsome and healthy main trunk, which is only to diverge into branches at a given height from the ground. Where trees are grown in close proximity to each other, as in woods, Nature performs the office of denuding the stems of their lower branches. When in such close contact, want of air and deficiency of light, combined with the mechanical effect of friction and the natural tendency of the sap upwards, cause the destruction of all but the upper limbs of the trees. But whilst in a spacious forest a multitude of tall branchless trunks, canopied over by foliage high over our heads, possess a beauty and majesty quite their own, such a feature in isolated specimens or in small clumps would lose its charm. Hence, in artificially divesting trees of branches at 6, 8, or 10 feet from the ground, you are to have regard to the lateral space you wish them to occupy, and the aspect which you wish them to present. The second object in pruning is to obtain a symmetrical shape by lopping off straggling boughs or branches, clearing part of the shoots that grow inside the head when they are too numerous, cutting away all dead wood and unhealthy growths, &c. In pruning a tree, cut away the branch which is to come away close to the trunk, and the bark will soon "callus" over and cover the scar. In forest-pruning, it is held that a branch should be amputated at a foot or more from the trunk, or else the excision will cause knots in the timber. However this may be as applied to forestry, it cannot apply to the pruning of ornamental trees; for nothing can be uglier than these "snags," as such projecting old stumps are called. In training young trees to a stem, do it by degrees year after year till you have denuded the stem as high as you wish. Some at once cut away all the lateral branches of a young tree, except a few at the extreme top of the sapling. Others do still worse. With a view of forcing an upward growth, they cut the side branches to within a few inches of the stem, leaving the ugly snags on to push a few weak twigs next year. The result of this treatment is that the desired upward growth is obtained with a vengeance. The stem hardly grows in thickness, the sap rises to the few uncut boughs at the top, and you get a tall, thin, weakly object, that will never form a tree at all. It becomes what is technically called "whippy," because it resembles a coachman's long whip, and the only remedy, if once the young tree has been pruned into that shape, is to take it up and plant another in its stead, which you must take care not to serve in the same manner. It is the growth of the side branches which promotes expansion in the diameter of the main stem,

and the lower ones must only be removed by degrees, when those higher up appear sufficiently numerous for the young tree to bear the loss of the lower ones with impunity. If a young bough shows a propensity to grow out of place, or to an undue length, so as to require repression, this may be effected whilst in a young stage of growth, by simply pinching off its extremity, thus arresting its further extension. The proper time to prune trees is between the cessation of their growth in autumn and the movement of their sap in spring. The amputation during summer of the woody parts of trees is injurious to them in many ways, and in many species produces a copious discharge of sap (termed "bleeding"), which considerably weakens them. But the process of trimming hedges, or (where there is a fancy for such things) clipping evergreens into fantastic shapes, is performed in summer, as this promotes a second growth from the parts that are left untouched, which makes the foliage and spray denser.

A. MONGREDIEN.

The Mountain Ash.—This, when laden with bright scarlet berries, forms a most conspicuous object in our landscapes. Indeed, its merits in this respect, are not sufficiently appreciated, for it is oftener found growing in out-of-the-way situations than as an ornamental tree. Like the Barberry, it delights in a somewhat strong soil and damp climate. Under such conditions its graceful foliage is luxuriant and green, and the berries large and bright. I remember being very much struck with the effect produced by the trees when in fruit, on one occasion when travelling between Hawick and Carlisle, in the valley of the Esk. In that locality it seems to be at home, for I do not recollect seeing such large and brightly-coloured berries as I saw on these trees, though, no doubt, it would do as well in any similar situation. The wood is also valuable for many purposes, so that there is some inducement to plant it. Its effect is most striking when planted in groups.—S. W. J.

New Lilacs.—These are announced in various quarters, and it is only surprising that there are not more of them; for the beauty of this grand early-flowering shrub is proverbial. Among the new varieties referred to, *Ville de Troye*, a dark flowered and late blooming variety, promises well; and *Rouge ponctué*, of very bright colour, is equally good. *Géant des Batailles* and *de Croucels* are both of them brilliant varieties. The blossoms of *Gloire des Moulins* are flesh-coloured, and said to be very fragrant; while *Aline Mocqueris*, of dwarf growth and a very abundant flowerer, may prove extremely valuable for planting nearer to the front of shrubberies than the taller growing kinds. Notwithstanding all this wealth of novelty, one still finds the old kinds—the common broad-leaved (*Syringa vulgaris*), and the Persian or narrow-leaved kind (*S. persica*), being alone used (with very rare exceptions) in the planting of new shrubberies; even the magnificent and well-known variety, distinguished as *S. Lindleyana*, being, as yet, found in very few gardens, though procurable from any leading nurseryman.—WESTBOURNE.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

A Barren Walnut Tree.—Can any correspondent tell me of some means to make a Walnut tree bear? It is of large size, about fifty years old, and has always been very healthy, but has hardly ever borne any nuts.—*JACKDAW*.

A Pretty Combination.—I have just seen a little picture, formed quite accidentally no doubt, but none the less beautiful on that account. It consists of a low bush of the common Strawberry tree (*Arbutus Unedo*), covered with its pearly little berry-like bells, and nearly surrounded by a low hedge composed of *Cotoneaster Summersonii*, covered with its rich scarlet fruit.—*B*.

A Hardy Australian Shrub (*Leptospermum lanigerum*).—This is one of the few Australian plants that have proved quite hardy in England, and welcome for that, even if it possessed no other merits; but its fragrant glaucous leaves, its abundant white flowers, and copious crop of round, hard berries, form of themselves sufficient titles to our attention. We think that *Leptospermum ballatum* will also prove hardy, and we are engaged in experiments to ascertain the fact.—*Heathside Manual*.

Trees and Lightning.—A violent thunderstorm passed over Versailles in the beginning of last month, doing considerable damage. M. Berigny (in a note to the Paris Academy) draws the following conclusions from the effects: 1. Wherever lightning, in striking trees, meets neither branches nor knobs, it descends vertically, making a very distinct and narrow groove, a few centimetres in width. 2. When it meets branches, it passes round them successively, and describes a helicoidal groove. 3. When it meets a strong knob, it stops suddenly and changes in direction, to go to near conducting bodies, sometimes in various directions.

Pines on Mountains.—The *Gardener's Monthly* states that the *Pinus flexilis*, which grows on the Rocky Mountains and the Sierras, attains a height of 130 feet on mountain sides which have an altitude of several thousand feet, but on the higher and more exposed crests of Mount Shasta and other peaks, it is reduced to a straggling shrub creeping on the ground. On the large trees the cones are 5 inches long; on the reduced ones only 1 or 2 inches. We see a similar result with our New England trees on the White and other mountains. At the foot of Mount Washington, the evergreen trees are 60 or 70 feet high, but an hour's ride up the cloud railway shows the same species as small as Currant bushes and flat on the rocks.

A GERMAN CHERRY ORCHARD AND TIMBER-BUILT DWELLING HOUSE.

OUR beautiful illustration, which is quite a little masterpiece of wood engraving in regard to careful definition and high finish, represents a German farmhouse, with its duck pond and its little bleaching ground, where pieces of homespun linen are being spread upon the soft greensward; it has much the character of a timber-built English farmhouse of that style of rural architecture which harmonised very pleasingly with the surrounding scenery; the angularity of the black timber work, and its sharp effects, in connection with the white plaster-work between, forming a desirable contrast with the soft gradations of colour and undulating lines of the surrounding landscape. Those timber and plaster-built dwellings are fast disappearing in England, even from our most outlying villages in the remoter parts of the country; and the genteel filtered-down imitations of them, which the architects of our suburban villas are setting up in many parts, do not satisfactorily supply their place.

beauty. In some of the eastern provinces, indeed, important buildings are constructed entirely of wood; even to railway stations of large dimensions, and the official buildings of the smaller towns. This system might be used with advantage in parts of England, where brick-earth is absent and Oak timber tolerably plentiful. Split into thin lengths of about 8 inches in width, after the manner of park palings, such slips of Oak form a very available material, and almost any kind of dwelling might be constructed with it. Buildings so constructed, as we know by the fresh and sound appearance of very old park palings, of this material, would be exceedingly durable; and their grey tone would harmonise well with the landscape. From the cottage, put together in the cheapest possible manner, to the spacious shooting box, rendered ornamental in a variety of ways, timber buildings of this class might be erected with advantage. Of the Cherry orchard immediately surrounding the pretty German dwelling, it may be observed that Cherry culture in



Timber-built House and Cherry Orchard.

In many parts of Germany, however, timber still plays an important part in the external walls of farmhouses, and the same ancient custom of colouring the timber black and the plaster-work white, also prevails, as shown in our illustration. There, too, however, the old timber-built manse is destined soon to pass away, and brick or stone, it is becoming evident, will eventually replace the external use of timber altogether; but in many parts of Germany this will be a slow process, for the Pine forests are so far from being exhausted (as they have long since been with us)—that wood, as the cheapest possible material, will continue for a time, in spite of all attempted innovations, to be largely employed for such purposes. In some of the more eastern provinces, indeed, wood is used for the roof as well as the walls, being split pieces of Pine, of about the size and thickness of tiles, and used exactly as tiles or slates are with us. With this material, many architectural features are wrought out in south-eastern Germany with great ingenuity and

cottage and farm gardens is very much neglected with us; and yet, wherever it is adopted, it is found to be profitable, to the extent of paying the rent. H.

A New Source of Indiarubber.—Among the various plants from which a juice is obtained suitable for the manufacture of Indiarubber, the *Sapota Mulleri* may be named. This plant is found abundantly in British Guiana; but, although its nature has been long known, from the wood having been very generally employed for building purposes, and on account of continual attention having been called to its profusely abundant sap, yet it is only quite recently that this sap has been utilised for commercial purposes. It appears to have been Mr. Melville who first suggested to English capitalists the commercial value of the sap of *S. Mulleri*, in the year 1860; and already the product is being largely exported under the name of *Balatagum*. This discovery is becoming important, as the true Indiarubber plant is said to be nearly exterminated by the reckless proceedings of greedy agents.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Hardy Flowers, Alpine Plants, and the Wild Garden.

When to Cut the Plumes of Pampas Grass.—This Grass possesses a beauty which reaches far beyond its mere autumnal career in the garden, a beauty which is, in fact, persistent, that is, provided the spikes are cut in proper time. Nay, further, I am almost disposed to give it a use and purpose even beyond the mere ornamental—what more appropriate than to utilise it in lieu of those bunches of feathers for the purpose of removing dust from glasses, paintings, and other delicate ornaments? Its soft silky texture, and its length of stem combined, appear at once to give it an admirable adaptation for such a purpose. This statement will, no doubt, be met with an assurance from many that it is liable to tumble to pieces by a gradual process of disintegration, and its value in this way altogether neutralised. There is, however, a right time to cut it, by which this serious disadvantage may be altogether avoided. To fix this time as referable to a week or even a month would be an unwise procedure, so much depending on the season and also on the locality in which it is grown. It will, therefore, be better to take its state of development as the criterion by which to judge; every day that succeeds the full expansion of the panicle from the sheathing process in which, in its young state, it is folded, depreciates, in the first place, the purity of its silky texture, and, in the second, renders the possible fertilisation of its flowers, even though perfect seeds may not be developed—a serious detriment to its value, whether taken from an ornamental or utilitarian point of view. Be it remembered, also, that there is a considerable difference between the male and female plant; the former, though the more elegant, is much less persistent in its blossom than the latter; hence, the female plant is, by all means, to be preferred, added to which, the silvery character is much more pronounced. Having said so much about the bloom, let me put in my veto against cutting away the foliage after the flowering is over; this is something worse than a piece of vandalism. Not only are its gracefully recurved lines beautiful, even when coloured with the autumnal yellow premonitory of decay, but they constitute Nature's true protective covering against the snows and frosts of winter; any removal of the foliage should be done in spring, when, or rather just before, fresh growth commences. It should always be remembered that in its native habitat, frosts and snows are almost unknown; hence, we should not only be thankful for the wondrous adaptability with which it is endowed that enables it to withstand the many vicissitudes of our northern climate, but also assist Nature by all the means in our power. The foregoing remarks on the *Gynerium*, lead me on to say a word or two about another plant from the southern hemisphere, to which much of the autumnal gaiety of our garden is indebted—namely,

The Tritoma.—Not unfrequently have I seen the foliage of this plant cut off almost close to the ground, leaving the tender leaves at the heart bare of all protection, and, this too, at a time when the tissues are most liable to suffer; let every leaf be left intact until well on in the spring, when the sharp upright growth of the newly formed foliage indicates that vital activity is once more called into action, and then, and not till then, remove the foliage of the previous season. This is all the more necessary, seeing that there are Tritomas that flower in the winter, and, in fact, all winter through. Frequently have I seen the thick fleshy stems that have laid prostrate on the surface of the snow during a severe frost, rise again erect when the weather moderated; and, although not so brilliant by any means as the old *T. Uvaria*, still, produced in mid-winter, their flowers have a value that fully compensates for any deficiency in colour. It may be interesting to some of your readers to know whence arises this peculiar habit of winter-blooming in the Tritomas, and on this matter I think I can throw some light. Some twenty-five years ago, there were three species in cultivation, respectively known as *Tritoma Uvaria*, *media*, and *sarmentosa*; the two former were up to that time to be met with in a puny half-starved condition, in those conservatories where collections, rather than selections, were the order of the day; the latter, a by no means showy plant, had been relegated to the herbaceous border (in those days such a border did exist in all places that had any pretensions to the name of a garden; possibly its ancient prestige was waning, for, if I remember, at that time General Tom Thumb had taken the field with his fiery red coat, and not only threatened, but actually did, clear all before him); now this plant had two peculiarities, the first whence the specific name was derived, consisted in the fact, that a shoot or bud was developed from the side of each flower-stem, by which means the plant might readily be increased; the second was, that its period of blooming was so indefinite that it could only be specialised by saying that it bloomed all the year round. Let me here ask, do any of your readers possess the true old *Tritoma sarmentosa*? With me, I

regret to say, it is lost, no doubt it is to be found somewhere in the country, and I should much like to possess it once again—possibly this enquiry may enable me to find out its present location. At the time I allude to, when our so-called tender Cape plant was first turned into the open ground, and first enabled to prove its adaptability to our northern climate and soil, it was naturally associated with its congeners, and, as a cross, the old *Tritoma sarmentosa*—without losing its winter-flowering proclivities—improved in colour and size to that extent that the depreciation is usually attributed to a want of sun to bring out the incalescent character which the early autumn blooms of the true *Tritoma Uvaria* possess. That there are distinct species so called, beyond the three named, I very much doubt; I look upon them as merely variations, sometimes more *Uvarian*, sometimes more *sarmentosan* in character; and this, I judge from some forty or fifty seedlings originally raised and equally divided between the two parentages. These two plants, viz., the *Gynerium* and *Tritoma*, hold such an important position in the autumn decoration of our gardens that I think they are fully entitled to a special individualisation in the “weekly calendar.” There are but few plants from the south of the Equator to which the term hardy can be honestly applied, and, so far as the flower garden is concerned, most distinctly do these stand in the foremost rank.—JAS. C. NIVEN, *Botanic Gardens, Hull.*

Flower Garden and Pleasure Grounds.

The unusually mild weather experienced during the latter part of October and the early part of the present month has caused *Aubrietias*, *Primroses*, *Violets*, *Forget-me-nots*, and similar plants, to very considerably anticipate their usual time of flowering, and our gardens may almost be said to be already somewhat gay with spring flowers; Grass also continues to grow so much, that the mowing-machine can hardly yet be dispensed with. With the exception of the Oak, the leaves of most other deciduous trees have fallen, and a thorough clearing up is necessary, in order to remove worm-casts as well as fallen leaves; and, after all this has been done, all lawns and Grass belts should be well rolled, with a somewhat heavy iron roller, while the turf is soft and elastic; and, wherever the surface is to any extent irregular, the present is a suitable time to rectify such inequalities. Where little elevations exist, they may be, to some extent, forced down by the use of a heavy rammer, or turf-beater, and the turf should be removed from depressions, and soil should be introduced to raise them to the proper level, replacing the turf as soon as this is done; but, wherever considerable irregularity of surface exists, it is then advisable to carefully remove the turf altogether, and make the surface from which it has been taken perfectly level; and it can hardly, indeed, be rendered too solid. As soon as this has been done, let the turf be re-laid, beating it well down with a heavy turf-beater, occasionally rolling it during winter and spring when the weather will permit. Finish the planting of *Snowdrops*, *Crocuses*, *Anemones*, *Tulips*, *Squills*, and similar bulbous plants. The herbaceous ground, too, should now have a thorough cleaning, cutting down and removing all decayed stalks, together with the remains of annual flowers; *Dahlia* tubers, and the bulbs of the various kinds of *Gladioli* should also now be taken up, and, after being well dried, stored out of the reach of frost. Wherever improvements and alterations are in hand such work should now be pushed forward with all possible despatch, as the present mild damp weather is exceedingly favourable for the transplanting of trees and shrubs, as well as for the re-laying of turf, and of Box and other edgings. Many trees and shrubs may be readily increased by layering their lower branches, and the present is a suitable time for performing that operation. In cases where this may have been done about this time last year, such layers, will generally now be well rooted and should be removed from the stools, trimmed into form, and planted out in lines in the nursery ground, or wherever they may be required. This is a somewhat critical period for recently struck cuttings of *Pelargoniums*, and other bedding plants, and it may, in some instances, be quite necessary to assist partially-rooted cuttings with a little artificial heat, especially in the case of the various variegated and tricolor *Pelargoniums*, *Heliotropes*, the dwarf variety of the *Ageratum* (*Imperial Dwarf*), and the various *Coleuses* and *Alternantheras*, while the *Fuchsia*, *Verbena*, *Lobelia*, and several other kinds of bedding plants, being more hardy, may, if fairly rooted, be allowed to remain for some time longer in cold pits or frames.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Roses.

The question is often asked, “what Roses can I plant against my garden walls, which I want to look green as well as gay with flowers. Many varieties of Roses are evergreen, and in mild winters, with careful training, will cover a wall and look as neat as Ivy. It is not, however, advisable to use evergreen Roses altogether for wall-covering, as they only flower once, and then all is blank, with the

exception of green foliage for the season. The best plan is to intermix with some of the free-flowering climbing Hybrid perpetuals, Bourbons, Noisettes, and Teas, allowing the evergreen varieties to form the groundwork. Thus, instead of a blaze of beauty for a month or so, the flowering season will be prolonged from June till October, and if the autumn is mild they will last even up to November. For wall decoration, of this kind, prepare the ground well before planting. The evergreen kinds should stand about 7 feet apart, so as to allow 2 feet for free-flowering varieties. The best of the evergreen Roses are the following—Myrianthes, *Felicité perpetuelle*, yellow, Banksian, Fortunei, spectabilis, Princess Louise, Princess Marie, Donna Maria, Banksiaeflora, and Ophirie. Of Perpetuals, use General Jacqueminot, Jules Margottin, Maréchal Vaillant, Princess Louise Victoria, Princess Mary of Cambridge, Glory of Waltham, Duchess of Sutherland, Prince Camille de Rohan, Anna Alexieff, Sir J. Paxton (Bourbon), Climbing Devoniensis, Gloire de Dijon, and Maréchal Niel (Teas). It is best, if possible, to wire or cover a wall with lattice work, on which to train such Roses. Continue to get on with new plantations, and remove any beds of Roses that require moving this month. Protect all pot Roses from frost. Examine all Roses under cover; use a little sulphur where mildew still exists, and remove all bad foliage. It is best to dip or wash Roses that have been prepared for forcing this month, with some Gishurst compound, and if the pots are full of worms, use lime-water. Put a good sized knob of unslacked lime in four gallons of water; pour off the clear water, and use that for the purpose. It drives out the worms, and does not harm the Roses.—H. G.

Indoor Plant Department.

Chrysanthemums, placed amongst plants of an evergreen character, at certain distances apart, and properly arranged as to colours, give conservatories quite a gay appearance. Some of the Acacias are already beautifully in bloom, and even Fuchsias, planted in indoor borders, are yet well furnished with flowers. Those trained to rafters, and the bulk of pot-grown plants at rest, should be cut in. Zonal Pelargoniums that were in pots all summer, and from which the flower-spikes were pinched during the autumn, should now be subjected to a moist warm temperature, in order to make them flower freely. Those which bloomed in early summer, and which were cut back early in July or the 1st of August, will come nicely into flower about Christmas, if placed in an intermediate temperature. Camellias and other evergreen plants still require water in considerable quantities. They should not, however, be deluged with it, but kept moderately moist. Some of the Tea plants in cool parts of conservatories are beginning to form dwarf evergreen bushes, and produce a profusion of pretty white Orange-like flowers. Dutch bulbs from the earliest potting are rapidly advancing, and should be kept in a moderate temperature. Succession ones should be kept under the stages of cool airy houses, plunged overhead amongst Cocoa-nut fibre. Cypripedium insigne, and a few other cool-house Orchids, should be introduced to the warmest part of conservatories; whilst Heaths, Mesembryanthemums, &c., should be kept in the coolest positions. In stoves a temperature should be maintained of 60° at night, with a rise to 70° by means of sunheat; the atmosphere, also, should be kept a little moist, as considerable injury is often done to both stove plants and Orchids by too dry an atmosphere in winter. During fine sunny weather the plants should be syringed about mid-day, in order that they may be quite dry before night sets in. Achimenes, Gloxinias, Caladiums, and herbaceous Begonias should be placed on their sides under stages, so as to be kept dry. Some of the Tydæas should be cut back and placed on shelves, but not kept absolutely dry. Torenia asiatica, one of the prettiest and most easily grown of stove plants, is in full beauty, and when grown in a basket suspended from the roof is very effective. Water Lilies, in some cases, should be cut over, so as to induce them to go to rest, and their room should be occupied by young Marantas and similar plants. Shoots of Stephanotis, Dipladenias, Allamandas, &c., should be spread out immediately below the glass in order to ripen the wood. Ixoras recently potted should be plunged in a little bottom-heat to induce fresh root action. Francisceas are coming prettily into bloom, and should be set on pots, above the level of the other plants, in order to show their beauty off to advantage. Some of the plants not wanted to flower so early should be removed to a cooler house. The different varieties of *Æschynanthus* are still gay, and form useful ornaments for baskets. Plants of *Eucharis amazonica* should now be subjected to a brisk bottom-heat, and have abundance of water, in order to induce them to flower. Plants of *Euphorbia jacquiniæflora* should also be liberally watered, and kept near the glass, in a brisk, moist, temperature. *E. splendens* and *Bojeri* look well, either on trellises or as wall climbers. They should be kept in intermediate houses and comparatively dry. Plants of *Curcumas* should be gradually dried off. The stems and leaves of

Gloriosa superba are now decaying, and the pots as soon as the bulbs are ripe, should be stored away like *Caladiums*.

Indoor Fruit Department.

The selection of varieties of Vines for renewing old, or for forming new, plantations in spring is an important matter which should not be neglected about this time. There is now such a variety of Grapes to produce fruit throughout the entire year that little difficulty will be experienced in choosing such kinds as will be suitable at any desired time and under all circumstances. The aim of the amateur cultivator should be to select such varieties as succeed best with the least attention. That many sorts succeed where others fail is often enough exemplified; Muscats, for instance, are not sorts which amateurs should plant, if success is expected to be attained with little care, or such as they can generally afford. As a black Grape, the old and well-tested Black Hamburgh is the best kind for amateurs to grow. It requires little more care than an ordinary green-house or window plant; it can be grown and ripened in perfection in favourable localities throughout the summer in any glazed structure without the assistance of fire heat—a matter well worth consideration now-a-days. Many kinds should not be planted in any one house for the mere sake of variety, as intermixtures are seldom productive of good results in the case of every sort. Those who only possess one house will do well to confine their selection to such varieties as succeeded along with the Black Hamburgh. Amongst these Duke of Buccleuch, Buckland Sweetwater, Royal Muscadine, and Foster's White Seedling are the best. The first-named is an especially suitable companion for the Hamburgh. These varieties will supply fruit for at least five months of the year, that is, from June to the end of October, with very little trouble. Where only two Vineries exist, the second should be planted with late varieties to succeed those just named. For this purpose Black Alicante, Black Lady Downes, Gros Colman, and Gros Guillaume, are the best black sorts, among which preference should be given to the first two; as whites, White Lady Downes, Trebbiano, and the true Syrian are good sorts. Where a great many Vineries have to be planted, each variety should have a house to itself. The Esperione, which is one of the hardiest of all Grapes, does well in low ground Vineries. I may mention that in ordering good Grapes never wait until the last moment, as, where orders are executed in rotation, early ones have the best chance, as far as selection is concerned. Many prefer seeing and choosing their own Vines, and in such cases those with short-jointed nut-brown wood, little pith, and strong prominent eyes should be selected. Keep the ventilators of Vineries, in which Grapes are still hanging, quite close during damp wet days, and as the nights are now cold and damp, no air should then be admitted. Do not apply fire heat at night, unless the thermometer falls below 35°. See that no leaves or other matter likely to harbour or promote damp are allowed to remain in the same house in which Grapes are hanging. Coverings of mats or any woollen substance, should now be kept in readiness, for covering over the lights of Pine pits, when the nights are very cold; this not only saves firing, but is of great benefit to the Pines, as nothing is more trying or debilitating to their constitution than being subjected to a powerful fire heat.—J. MUIR, *Glenfords*.

Hardy Fruits.

Transplanting fruit trees has a tendency to cure sterility, and root-pruning is partial transplantation. The root is shortened, and, in virtue of that, its character and position are altered. The result of root-pruning is new roots and new root-runs, and in so far as it provides the latter, it is virtually a transplanting process; but we may also elect to transplant rather than root-prune. An examination of the state of the roots, may counsel a change of place and of food, and not a reduction of the number of roots. Roots made far from the surface are generally much different in character and in function from those formed near to it. Hence a tree may often be led into fertile habits, by simply raising its roots nearer the surface. Roots go instinctively where they will, if let alone. Encourage them to the surface by good food, and they will, as a rule, mount there after it, and abide and thrive amongst it. But worry them with other roots, or by deep-digging for other crops, and down they go. In all such cases the cultivator is bound to right the wrong he has done by bringing the roots up again—that is, by transplanting. The practice is mostly a cure for sterility for a time; but, if digging and cropping are again indulged in, the transplanting will need repeating again and again. Having brought up the roots, they should then be encouraged to remain near the surface, by leaving their bit of earth wholly to themselves. Nothing can exceed the short-sightedness of refusing to our fruit-trees a bit of ground wholly for the use of their roots. We build walls at great cost, skim meadows, and incur other heavy expenses in fruit-tree culture, and then spoil all for a crop of early Peas, Cauliflowers, or Potatoes, that any raised

bank or warm border would have grown as well or better. It is hardly worth while inducing fertility in trees through raising their roots near the surface, unless we are to let them remain there. One primary object of transplanting is to place the roots wholly in fresh soil. It is quite possible to remove the old and provide fresh material without changing the place of the tree; this transplants the roots, though the tree may occupy the same position as before. A tree may grow pretty freely and lack the power of fruit-bearing; but, place the roots in a good medium, and fertility follows, as a matter of course. This may also be done with very little root-pruning if skilfully and cautiously set about, and the roots in the new root-run will recoup the loss incident to their destruction in a few months, and will hasten to multiply roots on all sides that will take short cuts to fertility.—D. T. FISH.

Kitchen Garden.

The mild autumn so far, which we have had, has been favourable to late-planted Lettuces and Endive; therefore, if ordinary precautions are taken to protect them from frost—and it does not require a very severe frost to injure Lettuce when full of growth—there will be for some time an abundant supply of salading. It often happens that there is a scarcity of good Lettuce after Christmas, from January till March, but that is a void it is not at all difficult to fill, if a pit can be spared now, with a hot-water pipe running along the front of it. If the pit has been used for Melons or Cucumbers, stir up the bed, or add a little fresh material to it; that will furnish a little bottom-heat by which the difficulty of supplying good crisp Lettuces in February may be easily surmounted. Select plants from the sowing made about the end of September; the Bath Cos is as good as any for the purpose, but there is no occasion to depend altogether upon one kind. Plant rather thickly, say about 6 inches apart, as, when the leaves meet, the largest heads may be tied up for use. About 6 inches in depth of any light rich soil will do in which to grow them; and the hot-water pipe will, without allowing it to get very hot, keep the air in motion, and maintain a healthy growing atmosphere, in which mildew will not easily effect a lodgment. This is the best, and in fact the only reliable way in our climate of producing good Lettuces in February. When the leaves will part readily from the crowns of Sea Kale, preparations may be made for forcing it, whenever it is desirable. It will force easily in the Mushroom-house, or in any other dark place, where a temperature of 55° or 60° can be maintained, and where the air can be excluded; or it may be forced where it grows, by covering with pots and fermenting materials; both systems have their advantages, and under certain given circumstances, both may be adopted. If the produce is required early, and it is decided to take the roots up to force, they should be lifted and just the longest ends cut off, which may be reserved for planting again in spring, and be laid in close together on the north side of a hedge or fence, from whence they may in suitable quantities, at intervals, be taken for forcing. On the approach of cold weather, observe, however, to cover them with litter, in order to keep the frost out. Rhubarb also, may be forced in much the same way. Medium-sized roots are best; they should be taken up as carefully as possible, and on no account should large roots be divided or cut about more than is absolutely necessary. Rhubarb-roots may be forced set closely together on a floor in any warm place, with only just sufficient soil to fill up the interstices between them. Do not let the present mild weather deter us from making preparations for frost; as it may now come at any time, have protecting materials ready for anything that may require covering; and as everything, in consequence of the mild growing weather, is gorged with sap, if sharp frost should set in, rather more care than usual will be necessary to keep all safe. There are various ways of protecting Broccoli, such as opening a trench on the north side of the plants, then placing a fork or spade on the south side, heeling them over carefully, and banking up the stems with earth; the upper part of the stems, where the heart springs from, is the most tender part of the plant, and that where protection is most required. Where the plants have had plenty of room to grow, say from 3 to 4 feet between the rows, and where there is, consequently, room to get in amongst them with the spade without injuring their foliage to bank the soil well up the stems, it will be a very great protection, and will not injure them in any way, whatever the character of the season may be. They may also, when frost sets in, have Fern or litter placed between them, and a little scattered lightly over them, but the latter should be removed when the frost is over, or the plants, or a portion of them, may be taken up with balls and planted in a more sheltered place. It should, however, always be borne in mind that any check of this kind now tends to reduce the size of the heads. The largest Turnips may be taken up to be prepared for frost; but the Black Stone will stand a good deal of frost without injury.—E. HODDAY.

THE YOSEMITE VALLEY.

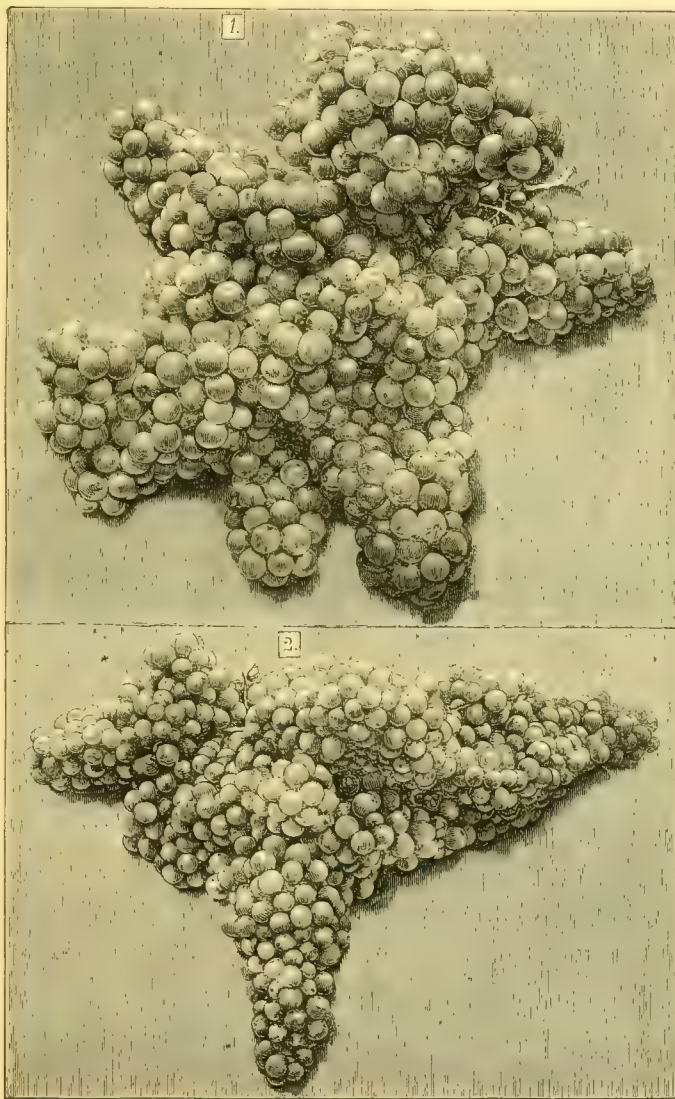
LEAVING Mariposa, our party, seven in number, thoroughly enjoyed the forest ride up the Chouchilla Creek, over the Divide, and down nearly 3,000 feet to the end of the stage road, the famous ranch of Clark and Moore, on the South Merced, a lovely, lonely, piney, primitive place. The Mariposa grove of big trees is about six miles from Clark's, up a trail somewhat rough, but leading through forests of great beauty. Many of the Pines along our way were of imposing breadth and height, but the first regular Sequoia gigantea we came upon was lying prone upon the earth, that had yielded to him when he fell almost as the sea gives place to the hull of a great ship. Grandeur and grander they grow, these sombre Titanic shapes, the longer you linger and look; and you feel that you will never quite pass out from the solemnising shadow that fell on you like that of the great past. Early the next morning we were mounted and away—eager for the Yosemite. We dined at Paragoy's the new half-way house. A few miles further, and we were on Inspiration Point, looking down on the mighty Mecca of our pilgrimage—an awful depth, whose vastness is wedded to unimagined brightness and loveliness; a sight that appalled while it attracted; a sublime terror; a beautiful abyss, the valley of the shadow of God. It seemed to me as I gazed that here was Nature's last, most cunning hiding-place for her utmost sublimities, her rarest splendours. Here she had worked her divinest miracles, with water and sunlight—lake, river, cataract, cascade, spray, mist, and rainbows by the thousand. There were arched and pillared rocks, so massive, so immense, it seemed they might have formed the foundation walls of a continent, and domes so vast, they seemed like young worlds, rounding out of chaos. By this trail you enter the valley near the Bridal Veil; and beautiful Pohono had dressed herself royally in rainbows to receive us. The sight of this fall, in the height of its summer glory, and the surpassing loveliness of the valley through all the five miles that remained for us to ride, charmed away fatigue. We forded countless streams, cold as snow and bright as sunshine; we passed through forests of blooming Azaleas and sweet Wild Roses and wondrous Ferns, grand natural parks of Oak and Cedar, groves and avenues of Locusts and Pines—indeed, of all sorts of trees, for the variety of foliage in the valley is wonderful. The Yosemite Falls proper, the entire descent of which is over 2,600 feet, are immediately in front of the Hutchings' Hotel, on the north side of the valley. Of course, from below you can see nothing of the Yosemite Creek. It looks as though it was a cataract from the start, born of the sky and the precipice. The roar of this king of waterfalls, in his grandest times, has a singular dual character—there is the eternal monotone, always distinct, though broken in upon by irregular crashes and booms, like gusty thunder. . . . The scene at the hotel on the morning of my second day was something memorable. The grounds and piazzas swarmed with tourists and guides, all demanding animals at once to make the excursions of Glacier Point or the Vernal and Nevada Falls. The more fortunate part, who got horses early, went to Glacier Point; others went to Nevada Falls, and had dinner there, and in the midst of it were called out of doors by the thunder of a great stone avalanche, which came down from the Cap of Liberty, and almost buried the hotel, and covered them with dust. They thought it was an earthquake, and wouldn't have missed it for anything. The rest of us finally straggled on one by one for the Bridal Veil, some on foot, some on horseback. Some of us found the place, others got lost. The party that got lost had the lunch basket. Glacier Point is on the south side of the Valley, 3,700 feet above the meadows. It is the point that gives you the finest comprehensive view of the Valley—especially of its upper waterfalls and rocks—with vast views of the High Sierra. All the great heights were pointed out to us—Mount Hoffman, Mount Lyell, Mount Dana, Mount Clark, and Mount Starr King. The vast view, from Glacier Point is the despair of poetry and art. Certainly its grandeur can never be compassed by the grandest sweep of human language. It is glory that must be seen; it is sublimity that must be felt; it is the "exceeding great reward" that must be toiled for. In our return journey we stopped at the Big Trees near Murphy's. The groves contain nearly a hundred of the giants. The tallest now standing is the "Keystone State," 325 feet. You drive past the stump and a section of the trunk of the immense tree felled several years ago. It was in its prime—only about 1,300 years old—and sound to the heart. Its fall shook the grove, as Cæsar's fall shook Rome. It took half-a-dozen men with pump-augurs and wedges twenty-two days to do the dreadful deed. Over the stump is built a pavillion, dedicated to religious services, political meetings, dancing and tea parties. It is 32 feet in diameter. There is one dead tree yet standing, called the "Mother of the Forest." "Grant" is a solid, stately tree, 261 feet high. It seems perfectly sound and may stand a good 500 years, unless flyers, choppers, and augurs prove too much for it. The South Calaveras Grove contains more than a thousand Sequoias of stupendous size. GRACE GREENWOOD.

THE FRUIT GARDEN.

HUGE BUNCHES OF GRAPES.

OF the marvellous clusters of Grapes grown by Mr. Hunter, at Lambton Castle, we are enabled, through the courtesy of Mr. David Thomson, to reproduce the representations which appeared in *The Gardener*. The Vine which produced the largest cluster was struck from an eye in 1869. It bore six bunches the second year after planting, one of which Mr. Hunter staged in his first-prize collection in 1872. It bore eight bunches in 1873, one of these being the heaviest black Grape shown at Manchester, which weighed 13 lb. 4 oz.; while the smallest of the other seven weighed 4 lb.

This year it has borne five bunches, one (fig. 1) 21 lb. 12 oz., one of 11 lb. 2 oz., of faultless symmetry, and the remaining four weighing 13 lb. 13 oz. In the same house grew a Vine of Raisin de Calabre, which bore a cluster (fig. 2) weighing 15 lb., and five others scarcely less; and there were also immense Trebbianos of from 10 lb. to 12 lb., Gros Guillaume of from 14 lb. to 16 lb., very large Muscats, and Foster's Seedling of immense size and splendid quality. Mr. David Thomson assures us that the cluster of Black Hamburgh which weighed 21 lb. 12 oz. was not "brought about from fasciation or from the fusion of several bunches into one by natural grafting," he having inspected the bunch on two different occasions, and found it to be what gardeners term one distinct and separate "show" or bunch, with a main stem perfectly round, like any ordinary bunch, free from any fasciation or "natural grafting," as has been insinuated. All are aware that Black Hamburgh bunches assume all sorts of shapes, even on the same Vine. This was strikingly exemplified in the case of the Vine at Lambton. They sometimes come without any shoulders worthy the name; at other times they have shoulders nearly as large as the body of the bunch. The bunch in question was as remarkable for its curious shape as for its size, but it was one bunch, and the largest and heaviest yet grown. As to soil, it is the same sort that had been used for Grapes before these Vines were planted. It is a strong holding material; the Vines are grown at somewhat between 3 and 4 feet apart, up a long rafter of a 22 feet wide lean-to Vinery. The Vines are allowed to carry a very full complement of lateral growth and foliage, are very copiously watered and fed, and are remarkably strong and thick in the bole for their age. It is useless to suppose that as these Vines get older they will continue to bear such large bunches; but, fine as they are in berry now, we predict, if nothing happens to them, that they will improve in size of berry if they decrease in size of bunch.



(1) Black Hamburgh. (2) Raisin de Calabre.

PEARS WORTH GROWING.

THE following is a select and comparatively limited list of the Pears best worth culture, with a brief description of each, and some advice as to the care which each variety specially demands. I have been careful to name no varieties which do not possess undoubted merit with respect to quality, productiveness, and size. If a few of very small dimensions are found among them, they are either kinds which ripen at a time when others are scarce, or varieties in which smallness of size is amply made up for by the possession of some indisputable good quality. I do not condemn all other kinds not named herein, but have made a long-studied selection from among the best. I have followed, as far as possible, the natural order of the ripening of the fruit, first grouping together those that ripen in the same

month; and, in the second place, arranging them in each month according to their respective early or late times of ripening.

July.

July brings us Pears once more. They are not yet such fruit as we shall gather in September and October, which will have acquired every perfection of quality and size, and the reason is very simple—the first fruits of summer have but little time to grow and ripen; those of autumn are longer nourished by the sap, enjoy for a longer time all the happy influences of heat and light, and have full time to come slowly to perfection; they are not hurried in any way. However, July Pears are not deficient in merit. In May and June we had nothing but the dry and leathery remnants of last year's crop, and now we have a supply of fresh, juicy, acidulous fruit, which deserves a hearty welcome from us. It is objected against these early fruits that they keep hardly any time, and the charge is partly true, but we must also confess that we are ourselves somewhat to blame in the matter. People generally do not know how summer fruits should be gathered; they wait until they turn yellow and fall, and then they set to briskly to collect them, but they are too late. The prudent gatherer makes several gatherings at different times; before the Pears are quite ripe he plucks a certain number, those that are most advanced, generally those on the lower parts of the tree; a few days afterwards he comes to those in the middle, and finally, some time later on, he gathers all the remainder. Adopt this plan; choose a fine day, when the fruit are not damp, and you will find that generally supposed. The following four kinds we can recommend:

Summer Doyenne.—May be grown in all forms, but produces the largest fruit when grafted on the Pear-stock. Gather at different times, and always before the fruit turns yellow; otherwise, they will decay rapidly.

Beurre Giffard.—The best of the early summer Pears. It never succeeds on the Quince-stock; but on the Pear, and planted in good soil, it bears freely and plentifully, sometimes in the beginning of the month, and often ripens in the middle of August. A handsome and good sort. Gather as before.

Citron des Carmes.—This is welcome, as being the earliest Pear—the fruit that in the beginning of the month will adorn your table

with its handsome delicate green. If you wish to enjoy its best flavour, you must not allow it to hang on the tree till it turns yellow. It does best when grown as a standard in an open airy position; is vigorous, and an abundant bearer. Gather the fruit at different times.

Jargonelle.—Grown in an open airy position as a standard on a Pear-stock, this Pear will soon repay whatever outlay has been made for it. Gather at different times before it is fully ripe, and eat it immediately, if you want to enjoy its best flavour.

August.

Another month—no insignificant fraction of the year!—and our fruits are already increasing in size. At the end of the month, the difference is quite remarkable. Be as careful in gathering as before, and use the same method. Four more varieties.

Bergamotte d'Ete.—An old-fashioned Pear, which has been somewhat neglected, but unjustly so. It is said to become mealy, but this only occurs when it has been permitted to remain too long on the tree. It should be gathered at intervals, and while green; if allowed to turn yellow, it becomes insipid. When grown in any of the larger forms, it should be grafted on the Pear-stock, if a vigorous specimen is desired; if not, any other form will suit it; it adapts itself readily to all. For standards, the ground should be well manured. It is a very productive variety, and if grafted on Quince, should be pruned close.

Monsallard.—An excellent Pear, which has the good quality of keeping well for a summer fruit, and may be allowed to remain on the tree until it begins to turn yellow. May be grown in any form, and is very productive.

De l'Assomption.—A new Pear, not more than five years introduced, but one which we very strongly recommend as furnishing the connoisseur with a splendid dessert, and the grower with an article for market that will bring him in a large percentage on his outlay. It has a superior flavour, and is of large size—a quality rare at this time of the year; in addition to this, it keeps well. The tree is vigorous, and a good bearer. As a pyramid, it does better on the Pear-stock than on the Quince.

Williams's Bon Chretien.—Introduced nearly a hundred years ago—a good old age!—and, as yet, not a symptom of degeneration! This would be the pearl of summer fruits if it had not that strong musky flavour, which everybody does not like. This, however, may be considerably mitigated by gathering the fruit somewhat earlier; and, if it loses any of its good qualities thereby, it will still have quite enough left. We need hardly advise you to gather the fruit at intervals, otherwise you will never be able to enjoy the entire crop in a sound state, for it decays very rapidly. Does best as a pyramid on the Pear-stock.

September.

This month is so rich in fruits, that it is necessary to limit our desires in making a restricted selection. Abundance renders us fastidious, so we must enter on our list only those fruits that are pre-eminent in quality, and those trees that are very productive and of easy culture. We give seven varieties, which will satisfy most of these requirements. It must be observed that it is now becoming more difficult to particularise the exact time of ripening, as we find it either hastened or retarded according to the soil, climate, or temperature of the year, and mode of culture employed. Sometimes certain sorts will be ripe in the end of August, which, under different conditions, may be found green at the beginning of October. Your own observation will be necessary here.

Beurre d'Amanlis.—This excellent fruit may be enjoyed at the commencement of September. Gather at intervals, and do not allow it to hang until it is fully ripened, if you wish to keep it. This advice applies to almost all the fruits of this period. Does well as a standard, but must be planted where it will be sheltered from the winds. It is also adapted for almost any other form; but its wide-spreading straggling branches hinder it from making a good pyramid. It is hardy, very vigorous, even on the Quince-stock, and bears abundantly.

Flemish Beauty (Fondante des Bois).—This has long been known under the name of Beurré Spence, and has also had many other appellations. It is rather vigorous, and does well as a pyramid. The only fault which can be laid to its charge is, that it ripens, perhaps, rather fast. It should, consequently, be well looked after, and carefully gathered at intervals.

Doyenne de Merode (Doyenné Boussoch, sometimes erroneously called Beurré de Mérode).—A very productive kind, but often deficient in vigour, unless it is grafted on the Pear-stock, on which it may be grown satisfactorily in any form.

Beurre Superfin.—It is generally a mistake to give fruits a high-sounding name. This is not the case in the present instance, for the Pear of Goubault has well maintained its early promise.

Not yet twenty-five years introduced it has made its way and achieved an excellent reputation. Most productive when grafted on the Pear-stock; it is a vigorous grower, hardy and prolific, and makes an excellent standard or pyramid.

Beurre Hardy.—Introduced about the same time as the preceding, it rivals it in the excellence of its fruit, and surpasses it in the qualities of fertility and of forming fine wood loaded with fruit-buds, suiting all climates, and adapted for all forms, but bearing off the palm for the splendid pyramids which it exhibits. In a word, it is one of the best fruits as well as one of the best trees. And yet, see what a task is ours! Neither Beurré Hardy nor Beurré Superfin are to be seen on the fruit-stalls which display such fine specimens (or, rather, such poor specimens) of inferior varieties. These two Pears (Beurré Superfin and Beurré Hardy) are handsome, fine, nay exquisite, and yet many who are fond of Pears do not even know their names.

Beurre Gris (Brown Beurré).—This old Pear, which is more frequently called "Beurré" for shortness, the Buerré *par excellence*, the type of good melting Pears. Always good, it is, unfortunately, rather tender, and, as an exposed aspect does not suit its constitution, it will require the concentrated heat afforded by a wall. It does tolerably well on the Quince stock, but in most cases it succeeds much better when grafted on the Pear. The fruit is generally of a grey colour when grafted on the Pear and on vigorous stocks; in other cases it assumes a yellowish-brown tint, the parts exposed to the sun becoming bright red.

Louise Bonne of Jersey (Louise-Bonne d'Avranches).—Introduced eighty years ago; everybody knows this handsome elongated fruit, which displays its fine crimson colour in charming contrast to its green foliage. Nothing surpasses the effect of those long cordons of it which we see on our walls, or encircling door-ways and windows like climbing Rose trees. Nothing surpasses the quality of the fruit, which, moreover, ripens very gradually and keeps well. This is not all; the tree is suited for every form, grows as it ought to do, almost forms pyramids of itself, is hardy, and, on the Pear-stock, makes remarkably fine standards. Its blossoms, also seldom suffer during late frosts.

Seigneur d'Esperen (Fondante d'Automne).—A delicious Pear. Tree vigorous and very productive.

October and Beginning of November.

We find here some slow-ripeners of last month. We are now in the middle of autumn, and getting richer and richer, in varieties at least; there must be a limit to everything, and the quality of the Pears we have already named cannot be surpassed. The following are half-a-score of the best.

Beurre d'Apremont (Beurré Bosc).—We bow to the decision of Pomologists, but, to tell the truth, we regret the substitution of this name for the old one of Beurré Bosc, a name venerated by gardeners. It is moderately vigorous, but very productive; suited for all forms, but often does badly when grafted on the Quince. The fruit has the good quality of ripening gradually, and remaining a long time on the tree. Do not on any account confound this with the Calebasse Bosc.

Marie Louise.—There are trees of splendid appearance whose fruits are not worth speaking of, and the same may be said of a great many members of almost every family; but, in this instance, the reverse is the case. Here we have branches growing irregularly, and not much to please the eye, but these deficiencies are amply redeemed by the superior quality of the fruit. Does best when grafted on the Pear-stock.

Beurre Dumon.—Another fine fruit, very little known, but sure to make its way. It is very productive, and forms particularly good pyramids. It does well, moreover, in any form, and we shall be happy if we succeed in making it better known.

Van Mons.—Named by M. Léon Leclerc, in honour of the distinguished Belgian pomologist. We have already remarked, that all trees do not succeed in all soils indifferently; like ourselves they have capricious constitutions: therefore, if we do not want to be without certain excellent fruits, let us indulge the trees with their proper requirements. In the case of the Van Mons, unless under very exceptional circumstances, we should never graft it on Quince unless we wish to have a consumptive subject to nurse afterwards. We must use the Pear-stock, or else have recourse to intermediate grafting. This is effected by interposing another graft between the stock and the variety we wish to grow. It is employed when the stock does not supply sufficient vigour to the desired variety, and in this case we first graft on the stock some vigorous kind, such as the Vicar of Winkfield, the Jaminette, or the Conseiller de la Cour, and when this is well established we graft on it the variety which we desire to grow. To this the intermediate graft communicates its native vigour and the result is usually most satisfactory; with the Van Mons it

has proved very much so. You see a fruit-grower is not without ingenuity. When you have treated your Van Mons in this way you will have a productive tree which is sure to supply you with excellent fruit, whether grown against a wall with an eastern aspect, or in any of the smaller forms.

Doyenne Gris (Red Doyenné).—This would have been better named Doyenné Roux, as, like all fruits of a red colour, it is only grey when it is not ripe. An old-established fruit, with all the qualities of the white Doyenné, of which it is a variety, and to which it sometimes reverts; however, it is a better keeper and a better fruit on the whole. Does best on a wall.

Ne plus Meuris (Beurré d'Anjou).—An odd name to a very fine fruit. Grow it in any form you like, it answers well for all; but, for the larger forms, it almost always does best on the Pear-stock. In any form it bears abundantly, and ripens from the end of October to the end of November.

Soldat Laboureur.—An excellent fruit, which, like the last, ripens from the end of October to near the beginning of December. Some people lay to its charge a very serious fault, namely, that it soon falls from the tree, but, for our part, we have never known this to be the case.

Doyenne du Comice.—A Pear of the very first quality, native of Anjou, and scarcely twenty years introduced. When we have occasion to describe the different good qualities of the fruit, we are invariably obliged to make use of some superlative; indeed, its superior perfections may be the very reason that Nature appears to have struck a balance in the other direction by bestowing on the tree only a moderate degree of productiveness. However, it is a pretty regular bearer, grows naturally in pyramid form and sometimes attains the dimensions of a standard.

Beurre Clairgeau.—Always handsome. We wish we could also say without reservation "always good," but we must add that it requires certain conditions of soil; this should be calcareous or schistous. Moreover, we cannot too strongly impress upon you the necessity of growing it in a suitable manner. Never train it in any of the large forms, but either as a cordon or in columnar fashion. Do not graft it on Quince. On the Pear-stock it proves extremely productive, and you will have plenty of fruit-buds to spare for presents to any of your friends who may want them. Under the favourable conditions and treatment which we have indicated, the fruit will prove fine and melting, very juicy, and even perfumed. It is worth a little special attention and trouble to obtain such a fruit in all its perfection.

Duchesse d'Angouleme.—A fruit well known in every Pear garden. On the Continent it is met with in the streets, by the cart-load, as well as on the barrows of the fruit-dealers who dispose of very good-sized specimens at a reasonable price, a way of doing business that we should very much like to see extended to other varieties of Pears. There is a great diversity of opinion, or taste, with respect to this fruit, and everyone's opinion is generally in some degree well-founded. The whole question depends on what sort of soil the fruit has been grown on. If on a cold one, it will have neither sweetness nor perfume, and we need never expect it to be as juicy and melting as when it has had the benefit of good soil and a good season. However, everybody will admit that the tree is vigorous, and its fertility very great. Considering these two never-failing qualities, in addition to those which the fruit exhibits whenever it has had the advantage of favourable conditions, we do not think we should be justified in omitting it from the present list.

End of Autumn and Beginning of Winter.

Here we must discontinue noticing the time of ripening, as Pears at this season are very capricious in this respect. No doubt the time at which they are gathered, and the manner in which they have been previously treated, as well the greater or less degree of humidity of the season have a good deal to do with this; but sometimes without any assignable reason, and, as it were, by mere chance, some varieties ripen sooner than usual, and others, on the contrary, later. Accordingly the only information we can give as to the ripening of the kinds which follow, is that some of them often come to perfection at the beginning of November, while others are not fit for table until December or January. We venture to make a selection of eight of the best.

Bergamotte Crassane.—This is generally called "Crassane" for shortness, which has the merit of greater simplicity. A good old kind which everybody knows, of vigorous habit and succeeding well on the Quince-stock, but requiring a wall, with an eastern aspect if possible. The fruit keeps well, and is fit for table when it begins to turn yellow.

Figure d'Alencon (Figue).—Not so well known as it deserves to be, for we can recommend it as a Pear of first-rate quality. The tree is moderately vigorous, but it grows evenly, is productive, and suited

for all forms. If your ground is not wet, you may grow it as a standard on the Pear-stock.

Beurre Diel.—One of those whose time of ripening is uncertain; we have it fully matured at the end of October, and in some instances not sooner than the beginning of February. Temperature, aspect, and quality of soil influence all fruits, and this variety especially. Under a combination of favourable conditions it attains a high degree of excellence. The tree is very productive. Even on the Quince-stock it shows great vigour, and does well in any form; however, as its blossoms suffer more in late frosts than those of any other kind, it will be much safer on a wall. A first-rate fruit and a good keeper.

Passe Colmar.—A Pear which has everything to recommend it—the queen of Pears of this season, of all seasons, perhaps, and, as such, deserving of all the care and attention that our gratitude can suggest. It is adapted for all forms, even the standard; and, although not a very fast grower, is exceedingly productive.

Winter Nelis (Bonne de Malines).—A small fruit, but one that serves to show very emphatically that good qualities may be contained within small dimensions. It has a delicious flavour and keeps well. The tree is of moderately vigorous growth; it may be grown as a standard, but the fruit is then very small. In all cases it hangs for a long time on the tree. Remember, once for all, that before planting late varieties in open ground where they will be exposed to high winds, you should consider whether their fruit is sufficiently hardy. Do not forget that they have to hang longer than summer fruit, and that they will be exposed the greater part of the time to the winds of autumn.

Fondante du Panisel (Passe Colmar, formerly called Délices d'Hardenpont).—An excellent Pear. Tree rather vigorous, but of compact growth, very productive, suited for all forms, assuming of itself that of the pyramid.

Orpheline d'Enghien (Beurré d'Aremberg).—It is only fair that this Pear should have some fixed name. The name which we have given it is that which it bore for a long time amongst us; then, on an objection raised by the Belgians—an ill-founded objection—the Pomologists named it Beurré d'Aremberg; afterwards, on an objection raised by the French—a well-founded objection—the Congress restored its baptismal title, Orpheline d'Enghien. The Belgians persist in their error, but that is their own affair. This is a first-rate fruit, ripening from December to February. The tree is exceedingly productive, but not of strong growth; consequently, it is best adapted for the smaller forms.

Beurre d'Hardenpont (Glou Morceau).—Another amended name. This is what nearly all of us used to call Beurré d'Aremberg, in spite of the expostulations of the Belgians, who were right this time, and to whose nomenclature in the present instance we submit without the least hesitation. This Pear has every good quality, except one (perfection is so rare!). As soon as the young fruit begins to "set," a certain number turn yellow, fall off, and disappoint the hopes which their numerous blossoms had raised. This defect we wish to point out candidly, and it is one which occurs chiefly in warm localities. The entire crop does not perish, it is true, and the portion that survives this critical period does much to repair the misfortune. While it is young, it might be said that the tree took a malicious delight in disappointing the cultivator, and seemed as if it would never be productive; but, once it has reached a certain age, its really fertile character displays itself, increases rapidly, and is maintained to the end. It is also vigorous, and grows evenly. The fruit keeps well, and may be allowed to hang until it is quite yellow. It is to be observed that this Pear does well in cool soil, where its fruit loses nothing of its quality. It is the Pear of all others for northern climes. Against a wall, with an east or south aspect, it is perfect, and does not exhibit the defect which we have alluded to; it does well, indeed, against a wall with any aspect.

St. Germain d'Hiver (St. Germain).—An old well-known French fruit—one of those that require a certain amount of attention; for which, however, it afterwards makes a plentiful return. A few favoured growers succeed in bringing it to perfection in the open ground; but it almost always requires a wall, in which position the tree is productive, grows vigorously, and yields delicious fruit from November to February. It is yellow when ripe, and keeps well.

We have now come to the end of our treasures, to the latest Pears. They do not commence to ripen before February, and they sometimes keep till March, or even April. You will be told that there are some, even among those we are about to mention, that last longer, and that may be met with in May and June—we were very near saying in July. This may be possible, no doubt, but it is excessively rare. We can, however, direct you how to keep them still longer: Gather them very early, in September, for instance, and you will succeed, only don't imagine you will ever have fruit fit to eat. No; even rats themselves would not touch them; and, though

you may keep them for a year or more, they will never be a bit the riper. The period of gathering the fruits of this season is very important; leave them on the trees as long as you can, provided there is no appearance of frost. It is not sufficiently known how much is added to the quality and size of the fruit at this time of the year by allowing them to hang two or three weeks longer. The following is a choice selection of eight varieties:

Olivier de Serres.—This is a Pear that you have, perhaps, never yet met with. It has only been a few years introduced, but those who have got it know how much may be set down to its credit. We can recommend it strongly as one of the best winter Pears. It hangs well on the tree, and does not seem to care about the winds. Of rather vigorous growth, and adapted for pyramid or columnar form.

Josephine de Malines.—A delicious and excellent Pear, although not very large. Succeeds well as a pyramid, but much better as an espalier, or against a wall, when it also attains a greater size. Under favourable conditions the tree is fertile and vigorous; produces abundantly, but does not come very rapidly into bearing.

Passe Crassane.—A newer Pear than the preceding, and much larger, introduced in 1855. An excellent fruit, and one which we should be glad to see in general cultivation; unlike some other kinds, it never begins to decay at the heart. Ripens in March. Tree of moderately vigorous growth.

Doyenne d'Hiver (Easter Beurré).—An old, well-known, and much-cultivated Pear, generally very productive, but almost always requiring a wall, and a warm soil. Do not forget our recommendation not to gather it until quite ripe. It is well known that it is a good keeper and can be enjoyed for a long time; in winter it is the ornament of the table and the delight of the palace, but most of us have to regret the fact that in unsheltered, cold, and northern positions, it is difficult to obtain any fruit that is not spotted and speckled and unrepresentable. Some cultivators recommend the following remedy for this: In the month of August or September, graft on vigorous-growing and sound-wooded stocks (such as Beurré Diel, Catillac, Jaminette, &c.), fruit-buds of the Doyenné d'Hiver, and your crop will be all that you can desire. We have heard some persons laugh at this; but, for our part, we think the voice of those who have had experience in the matter should have more weight than the voice of those who merely ridicule what they have never tried. Let them make the experiment; and if they find out then that the advice is bad, they will have plenty of time to retaliate as much as they please.

Colmar d'Hiver (Glou Morcean).—One of our old varieties, which should not be lost sight of. Rather slow in coming into bearing, but very productive when it once begins. It requires a wall and a good aspect. A fruit of first-rate quality.

Bergamotte Espéren (Espéren).—A fruit which the French are beginning to export, and we hope our foreign friends will never send us a worse one. An excellent Pear when the season is favourable, succeeding best against a wall. Tree very hardy, and, when grafted on the Pear-stock, does well in any of the larger forms. It is also of vigorous growth and very productive. One of the best late Pears and an excellent keeper.

Bergamotte Fortunée (Fortunée).—We have reflected seriously before entering this variety on our list. As a dessert fruit, it is often objected against it that it has too much acidity, ripens badly, and, consequently, becomes wrinkled in keeping. These objections are sometimes well-founded, but, at the same time, we are not ignorant that the defects alluded to will disappear when the tree is cultivated under favourable conditions—that is, in a light well-drained soil, in a warm position against a wall. In such auspicious circumstances the fruit attains an excellent quality. It is one of those fruits which we recommend to be gathered as late as possible; we believe that, in many cases, too early gathering is the cause of many of the complaints which are made against it. The tree is of tolerably vigorous growth.

Bon Chrétien d'Hiver (Winter Bon Chrétien).—The most ancient of our Pears. Some antiquarian writers would even refer it to the time of the deluge. It is a tree which requires some attentions; it must have heat, the support of a wall, and a south or west aspect. It grows vigorously on the Quince-stock. As a dessert fruit it is not to be despised, though, for cooking, it is perhaps more to be recommended.

Pears for Cooking.

In the matter of fruits good for cooking, the greater number of dessert Pears which possess a rather firm texture, and especially those of the winter months, might be employed with advantage. People generally, as may be supposed, reserve them for the table; they might, however, be much more used in the other way than they are at present. A great number of winter Pears are hardly good enough for dessert use, and seem to be specially destined for the

kitchen. In addition to the winter Bon Chrétien, which we have just described, we desire to mention only the following three sorts, which, we believe, will amply supply every need.

Martin Sec seems expressly designed for pastry and confections of all sorts, in the preparation of which it requires little or no sugar. Tree, hardy and productive, well adapted for a pyramid, but usually grown as a standard. An excellent stewing Pear, in use from November to January.

Catillac.—An excellent, handsome, large Pear, and a first-rate keeper. Tree, very vigorous and productive, and succeeds admirably as a standard, notwithstanding the great size of the fruit, which frequently become enormous when grown on a wall, in which position this Pear also acquires a splendid colour.

D'Abbeville.—A Pear, but little known, as fine as, or even finer than, the last-named, hanging well on the tree, which is vigorous, productive, and forms an excellent pyramid.

People like to be directed when they are in doubt, and the precise object of these notes is to instruct those who are in that condition. We think we shall help them by pointing out in special lists the varieties which are best adapted to the various forms of growth. We shall thus save them the trouble of referring to the previous descriptions. Each series, as will be seen, contains Pears of all seasons, but they are always placed in their order of ripening.

Selection of Pears for Standards.

Citron des Carmes (on Pear-stock)	Beurré d'Amanlis	Beurré Diel
Doyenné de Juillet (Summer Doyenné), (on Pear-stock)	Beurré Hardy	Passe-Colmar
Jargonelle (Epagne)	Louise Bonne de Jersey	Bonne de Malines (Winter Nelis)
Bergamotte d'Été (Summer Bergamotte)	Buerré d'Apremont (Beurré Bosc, on Pear-stock)	Josephine de Malines
Williams' Bon Chrétien (on Pear-stock)	Marie-Louise (on Pear-stock)	Bergamotte Espéren
	Doyenné du Comice (Comice)	Martin Sec
		Catillac
		D'Abbeville.

Not many late Pears, as will be seen, are in our list of standards. Experience has taught us, that the good winter Pears do not succeed in this form, and that it is only when grown on a wall, that most of them produce fruit worth speaking of. We should therefore reserve a portion of our walls for them, to the exclusion of other varieties, which will do pretty well in the open ground.

Selection of Pears for Pyramids.

Doyenné de Juillet (Summer Doyenné) on Pear-stock	Beurré Superfin	Bonne de Malines
Beurré Giffard (Giffard, on Pear-stock)	Beurré Hardy (Hardy)	Fondante du Panisel
Monsallard	Louise-Bonne de Jersey	Beurré d'Hardenpont
De l'Assomption (on Pear-stock)	Seigneur (Espéren)	Olivier de Serres
Williams' Bon-Christien (on Pear-stock)	Beurré Dumon	Josephine de Malines
Fondante des Bois (Flemish Beauty)	Ne plus Meuris (on Pear-stock)	Passe-Crassane
Doyenné de Merode	Soldat Laboureur	Doyenné d'Alençon
	Doyenné du Comice	Bergamotte Espéren
	Duchesse d'Angoulême	(Espéren)
	Figue d'Alençon	
	Beurré Diel	Martin Sec
	Passe-Colmar	D'Abbeville.

The Pears mentioned in this list will also serve for espaliers, a form of growth which we recommend as suited for the beds which run parallel with the walls. They are easily trained, and do not cause much shade; the fruit grown on them is not exposed to be blown off by the winds, and, as both air and light have free access to all parts of the tree, the crop becomes much finer and better. For an espalier you may also add Beurré d'Amanlis, which we do not recommend as a pyramid, on account of the straggling divergent growth of its branches. The Beurré Diel also has somewhat of this habit, but in a less degree. One word of advice. In gardens of some extent, when you plant on both sides of a walk, place the different kinds so that two trees of the same sort may be opposite each other. You will thus be less likely to have uneven growths, which are so offensive to the eye.

Selection of Pears for Walls.

We indicate the aspect usually most favourable for each.

Beurré gris (south and west)	Beurré d'Hardenpont (east and south)	Doyenné d'Alençon (south and west)
Van Mons (east)	Saint-Germain d'Hiver (east)	Bergamotte d'Espéren (south and west)
Doyenné Gris (east)	Josephine de Malines (south and west)	Colmar d'Hiver (south and west)
Bergamotte Crassane (east)	Passe-Crassane (south and west)	Bergamotte Fortunée (south and west)
Beurré Diel (south and west)	Orpheline d'Enghien (east, south, and west)	Bon-Christien d'Hiver (south and west)

In this list we have purposely been sparing of the eastern aspect, as we would recommend that position to be reserved for other kinds of fruits. If you desire to plant Pear trees on the north side of your walls, you should select summer kinds in preference. In this case refer to the list of pyramids. If, however, you are short of

walls with other aspects, and your ground is dry rather than moist, you might plant on the north side winter Pears, with the exception of the last three on our list of wall Pears, as these require a strong dose of caloric to ripen them properly. Remember, however, that the soil being of equal quality, the fruit will not be so good here as in any other position in the garden.

Selection of Pears for Columns.

With the exception of the Bergamotte Crassane (Crassane), Colmar d'Hiver (Gluon Morceau), Bergamotte Fortunée (Fortunée) and Bon-Christien d'Hiver (Winter Bon-Christien), which are seldom productive when not grown on walls, it may be said that this form is adapted for all varieties. In light soils, the preference should be given to the most vigorous growers, such as—

Monsallard	Beurré Dumon	Beurré Diel
Beurré d'Amanlis	Soldat Laboureur	Beurré d'Hardenpont
Beurré Hardy	Doyenné du Comice	Bergamotte d'Espéren

If, on the other hand, the soil is rich, and you do not wish for trees of great height, we recommend the following varieties, which are not vigorous growers, or only moderately so:

Citron des Carmes	Doyenné de Merode	Figue d'Alengon
Doyenné de Juillet	Beurré Superfin	Passe-Colmar
Epargne	Louise-Bonne of Jersey	Bonne de Malines
Beurré Giffard	Seigneur (Espéren)	Fondante du Panisel
Bergamotte d'Été	Marie-Louise	Orpheline d'Enghien
De l'Assomption	Van Mons	Olivier de Serres
Williams's Bon-Christien	Ne plus Meuris	Josephine de Malines
Fondante des Bois	Beurré Clairgeau	Passe-Crassane
(Flemish Beauty)	Duchess d'Angoulême	Doyenné d'Alengon

Selection of Pears for Horizontal or Oblique Cordons, or for closely-cut Forms.

Epargne	Louise Bonne of Jersey	St. Germain d'Hiver
Beurré Giffard	Seigneur	Fondante du Panisel
De l'Assomption	Marie Louise	Orpheline d'Enghien
Williams's Bon-Christien	Van Mons	Passe Crassane
Fondante des Bois	Ne plus Meuris	Easter Beurré
Doyenné de Merode	Beurré Clairgeau	Doyenné d'Alengon
Beurré Superfin	Duchesse d'Angoulême	

Observe that we have here indicated the finest fruits and trees of only moderately vigorous growth. As we remarked in the case of those selected for columnar training, you may, in light soils, substitute in place of these the more vigorous varieties which are there mentioned.

F. JAMIN.

Ripening Pears Artificially.—Pomologists would scarcely recognise that noble Pear, the Beurré Superfin, when gathered some weeks before ripening, and placed on a moderately warm flue for say a fortnight or three weeks. Wishing to get up a few specimens of this Pear for a particular purpose, I gathered them before they parted readily from the parent stem, and placed them under the conditions just named, and the result has been fruit altogether unlike the same kind when allowed to ripen more naturally. They were indeed, superfine, melting, and excellent. Some Pears are well known to require an analogous process of ripening; but I never met with a variety upon which this artificial ripening process produced such marvellous results. That type of a melting, buttery Pear—the Marie Louise, and that delicious fruit the Winter Nelis, on the other hand, ripen as perfectly on the shelves of the fruit room as anywhere else. Speaking of Pears, I may say that we have had and have in these gardens immense crops this year. For example, on one tree of the Beurré d'Amanlis, covering no more space of wall than 12 feet square, I had the curiosity to count the Pears, and found them to number 500.—WILLIAM HUDSON, *Chase Cliffe, Derby.*

PERSONAL.

WE are pleased to announce that Mr. John Gibson, jun., has been appointed to succeed his father in the important charge of Hyde Park and Kensington Gardens.—The Metropolitan Board of Works have accepted Mr. J. Meston's tender for re-modelling Southwark Park. Mr. Meston is also engaged in improving the following open spaces, viz., Shepherd's Bush Common, London Fields, and Stoke Newington Common.—Mr. F. L. Olmsted, the designer of the Central Park at New York, is engaged in laying out the enlarged grounds of the Capitol at Washington.—Mr. B. S. Williams furnished many fine Tree-Ferns, Palms, Dracenas, and other plants, for the decoration of the Guildhall on Lord Mayor's day.—Mr. Denham is retiring from the management of the gardens at Broxborough Park, where he has been gardener to the Duke of Roxburgh for more than thirty years; his successor is Mr. William McKelvie, the indoor foreman at Floors Gardens.—Mr. Bain has from ill health again resigned the curatorship of the College Botanic Gardens at Dublin, which is now directed by Dr. Wright.—Mr. W. E. Rendle is to do the glass portion of the Westminster Winter Garden.—Mr. Brotherton retires from the management of the gardens at Argyle Lodge, Wimbledon, and takes charge of the Earl of Haddington's gardens at Tynningham, East Lothian.—Mr. James Anderson has commenced business as a nurseryman at Meadowbank.—Dr. Moore, of Glasnevin, has been appointed joint examiner in botany with Dr. Perceval Wright, in the School of Medicine, Trinity College, Dublin.—Next year's "Carter" Cup, value fifty guineas, and other prizes, for vegetables, offered by Messrs. Carter & Co., are to be awarded at the meetings of the Royal Horticultural Society in 1875.

"NOTEWORTHY HORTICULTURISTS" AND "BRITISH GARDENERS."

CAN you tell me, Mr. Editor, what is the difference between a "noteworthy horticulturist" who is a gardener, and a gardener who is a noteworthy horticulturist? Not being accustomed to hair-splitting questions, I have got mystified over this problem, until like John Bright's Skye-terrier, I am unable to tell which is the head or which is the tail. I am induced to put this question to you and your readers at the present time, as I observe a contemporary, with a knack of cultivating popularity with the fraternity, has undertaken the onerous responsibility of classifying the craft upon what may be called the "artificial system" for the time being; though it is exceedingly doubtful if all the species will ever be satisfactorily identified. In fact, I doubt there are some important members of the group that cannot be reached by the proposed system of arrangement at all. I observe, your contemporary divides the genus into two classes—a first class composed of "noteworthy horticulturists;" and a second, and, as I suppose, an inferior class, who are only "British Gardeners." Evidently this is not a natural arrangement, and is sure to be an unpopular one. Indeed, I am surprised that some of the genus have already been found willing to conform to this arrangement. I see no reason why one family should not include the whole group. The "noteworthy," so far as they have been enumerated, include such excellent varieties as Chiswickiana, Kewensis, Gibsoni, Mooreana, M'Nabiana, and a number of others interesting chiefly in a botanical sense, and including some rather obscure types. Those named are all well-known, very worthy and popular kinds. Holeana I may mention as being of a robust character, and quite a unique and highly ornamental variety; M'Nabiana is another accomplished kind, but has lately appeared to suffer from some mysterious climatal influence; Gibsoni, too, is deservedly admired by all, and the others are possessed of good qualities: but none of these present features sufficiently distinct to warrant their being separated from a number of closely-allied genera, including some very notable members, such as Turnbullii, possessing no second-rate status, and celebrated for general good qualities, and the excellent strains which have been derived from them—types of the species, in fact, whose transmitted good qualities have become impressed in a marked manner upon the whole race, and whose names will occur at once to the minds of anyone having the least acquaintance with horticultural history. Why, therefore, this partial and unauthorised classification of an already well-understood species? It is to be regretted that the whole subject has not been more maturely considered, and the work taken up and executed in a comprehensive and popular manner. The only feature of the work under notice which meets with my approval is the separation of those having only a botanical interest from the cultivated varieties. Many of the former are unassuming enough in habit; but, as a rule, they are scrambling and weedy, and thrive but indifferently, except when backed by the garden varieties, and then they are exceedingly rampant, and sometimes parasitical in their habits, facts which have led some to suppose them to be a mere offshoot or "sprout" from the old garden stock—a supposition which gathers strength from the fact that they are characterised more by the absence than possession of many characteristics common to the latter. Be this as it may, however, should the gallery of "B. G.'s" go on, I would suggest the following concise method of description as being comprehensive and to the point. Class 2. History, struck as a cutting at A (date); potted off at B (date); planted out at C (date); thriving or otherwise; double or single; number of Olive branches; how trained; nourishment, including stimulents, found most serviceable; present health; and lastly, price, and if for sale. The whole might afterwards be catalogued for future reference.—HORTUS BRITANNICUS, in *The Gardener*.

The Agave a Cure for Scurvy.—General Sheridan, whose pacification of the Indian border is telegraphed officially by Sherman, is, according to the *Pall Mall Gazette*, by no means new to the hardships of frontier duties. It was not against the red men whom he has lately brought to order that he won his first laurels, but in combating the havoc of disease among his own little command, when, as a very young officer—the General is now but forty-five years old—he had charge of a small isolated post on the Texas border. Scurvy in its most serious form attacked his men, and there was no supply of vegetables or lime-juice to be had. But Sheridan had heard from an army surgeon that the juice of the Mexican Agave possessed the same anti-scorbutic properties. He organised a little expedition to go southward in search of it, and a grove of this plant being discovered about a hundred miles off, a good supply was procured, the juice expressed, and the men compelled, though not without many wry faces, and some protests, to take it in liberal doses. From that time the disease was effectually stayed.

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VAN HOUTTE'S "FLORE DES SERRES."

THE fourth and concluding triple part of the twentieth volume of this beautifully illustrated work contains the following plant portraits, most of them well and delicately coloured, but not, on the whole, so interesting as the plants figured in this work usually are. Plate 1, *Bertolonia Van Houtte*, a new seedling variety of this highly ornamental but delicate family, raised in the establishment of Mr. Van Houtte, of low growing, or rather trailing, habit, and with large leaves of a deep green richly veined with deep rosy-purple, which has been awarded the first prize for new plants at all the great shows in France and Belgium to which it was sent during this year, and to the great beauty of which this plate is said to do no kind of justice. Plates 2 and 3 represent a most beautiful *Camellia*, *Madame Ambroise Verschaffelt*, of large size and most fully double flowers of white colour, most beautifully streaked and flaked with crimson; it is also said to be extremely free-flowering. Plate 4, *Camellia Festiva del Grande*, a beautiful deep red variety, distinctly dotted and tipped with white, and with shell-like regularity in the arrangement of the petals. Plate 5, *Camellia Giardino Santarelli*, a most exquisite variety, the outside petals being pure white and the centre of the flower deep clear rose colour, forming a most distinct and lovely contrast. Plate 6 represents *Lilium dalmaticum*, the black *Martagon* from Montenegro, which was so exceedingly rare till introduced in considerable quantities by that indefatigable collector and traveller, Herr Max Leichtlin, of Baden Baden. Plate 7 represents *Linaria alpina*, a rather pretty little rock plant, but hardly of sufficient importance to deserve illustration in such a work as this. Plate 8 represents *Statice Bouduelli*, a yellow-flowered variety from Algeria, introduced to this country by Mr. Thompson, of Ipswich, which should be almost hardy, or do with only a slight protection in the winter. Plate 9 is a portrait of *Schomburgkia Lyonsi*, an apparently free-flowering white variety of this family, sent to Messrs. Rollisson, of Tooting, by Mr. Lyons, who discovered it on the mountains of St. Anne, in Jamaica; it requires the temperature of a stove. Plate 10, *Salvia Gesneriæflora*, a handsome scarlet-flowered variety, said to hold its blossoms much longer than the more generally known *S. fulgens*. Plate 11, *Pentapterygium rugosum*, also known as *Vaccinium rugosum*, a greenhouse shrub, sent to Messrs. Veitch, of Chelsea, by their collector, Mr. T. Lobb, from Bootan, and producing bell-shaped flowers of a greenish-white faintly streaked with red, more curious than ornamental. Plate 12, *Lepanthes Calodyction*, a curious little Orchideaceous plant, introduced from the Andés by Mr. Spruce, with small veined leaves, producing from their axils extraordinarily shaped flowers of deep crimson-yellow colour, which is said to be in all probability now lost to European collections, being extremely difficult to cultivate or keep. Plate 13 represents a rather ornamental bright golden-flowered Composite, known under the following various names:—*Craspedia glauca*, under which it is figured in the *Botanical Register*, t. 1,908; *Craspedia pilosa*, according to Sprengel; *Craspedia Richea*, according to Cassini, which name is adopted by Mr. Vann Houtte; and *Podospermum pedunculare*, according to Siebold, in his "Plants of New Holland." It has bright glaucous foliage, surmounted by large blossom heads in the shape of golden balls; it requires the protection of a cool greenhouse, and is easily propagated by cuttings. It is indigenous to Van Dieman's Land. Plate 14, *Corylopsis spicata*, one of the introductions from Japan of Messrs. Siebold & Zuccarini, and figured by them in their "*Flora Japonica*," t. 19. It is one of the Nut family, and is said to produce before the leaves appear, in the early spring, numerous catkins filled with yellow Cowslip-like flowers. But we think that this plate gives the idea of a far more beautiful thing than this plant really is. Plate 15, is a portrait of *Cattleya maxima*, one of the most beautiful varieties of this lovely family, and producing large flowers of a pale rose colour, beautifully suffused with white, and an exquisitely veined throat and lip. It is also known under the name of *Epidendrum maximum*. Plate 16, represents the well-known hardy climber from Chili, *Berberidopsis coralina*, whose deep green foliage and profusely produced bunches of deep rose-coloured blossoms, make it in every way so desirable a plant for training up the side of a house, or to a garden trellis. Plate 17, A most beautiful Hybrid Perpetual Rose, named *Mademoiselle Annie Wood*, of a fine deep rose colour, and most fully double, likely to be a grand acquisition. Plate 18, A curious, but hideous, green-flowered Orchid, with a black lip, named *Cœlogyne pandurata*, somewhat the same combination of colours as are to be found in the flowers of *Iris tuberosa*. Plates 19 and 20, An extremely handsome and showy yellow-flowered Orchid, *Oncidium ampliatum majus*, the underparts of the petals being pure white, makes it also ornamental from behind, and it is said to be of easy culture. Plate 21, a pretty

greenhouse trailer, with bright pink tubular flowers, with a pale yellow throat, and known under various names, as *Tecoma mirabilis*, *T. Valdiviana*, *T. Guarume*, under which name it is figured in the *Botanical Magazine*, t. 4,896, and *Campsidium chilense*, according to Seeman, and as figured here by Mr. Van Houtte. Plates 22 and 23, represent the white form of *Azalea sinensis*, with much smaller flowers than the type, but very free-blooming. Plates 24 and 25, are a re-production of a plate in the *Floral Magazine* of July, 1874, of one of Mr. Bull's double red *Primulas*, which, if anything like the picture, should be fine indeed. The first quarter of the twenty-first volume is promised by Mr. Van Houtte, before the end of this month.

W. E. G.

Beauty in Common Things, illustrated by Mrs. J. W. Whymper, is a very pretty drawing-room table book. The twelve sketchy pictures of some of our old favourites of the banks and hedges of our country lanes are treated in a broad, artistic manner, altogether free from the minute kind of prettiness generally found to prevail in gift books of this kind. The Wild Strawberry, with its flowers and fruit, is effectively treated, and we recognise at once the touch of the same pencil that produced the popular Christmas cards, also chromo-lithographed by Mr. Dicks, the reproducer of the present little pictures. The group of Mushrooms (*Agaricus campestris*), is another well-treated picture sketch; and so also is the branch of Apple blossom. The descriptions are all that are required to furnish the names of the plants, and to bind together the dozen pretty little pictures into the required form of a gift book.

Pear Synonyms.—Since the publication of his history of Pears, M. André Leroy has issued a notice to his subscribers to the effect that the thirteen Pears named below are identical with those bearing the names cited:—

1. Abbé Pérez	is the same as	Virgouleuse.
2. Angobert	"	Manquette Double.
3. Arbre Courbé	"	Amiral.
4. Bergamote du Bugey	"	Bergamote de Paques.
5. Beurré Caty	"	Orpheline d'Enghien.
6. Bonne de Soulers	"	Bergamote de Paques.
7. Colmar Charni	"	Léon Leclerc Epineux.
8. Doyenné	"	Doyenné de Saumur.
9. Doyenné Sentelet	"	Doyenné Commun.
10. Duc de la Force	"	Bellissime d'Hiver.
11. Duchesse de Brabant	"	Soldat-Laboureur.
12. Henri Bouet	"	Doyenné Commun.
13. Saint-Augustin	"	Vernusson.

THE *Revue Horticole* for November, has a fine plate of three varieties of annual *Chrysanthemums* (*C. carinatum*) of the new double kinds—a white, a blush, and a pale orange variety, being figured. These new border flowers, perfectly hardy, and of compact habit of growth, will become highly valuable during the early summer months, before German Asters appear; while later sowings will produce plants flowering at the same time as the Asters, among which no shades of yellow or orange are found; and, consequently, the double yellow annual *Chrysanthemum* will prove a great acquisition, and furnish a striking contrast to the blues, lilacs, and reds of the Asters.—H. N. H.

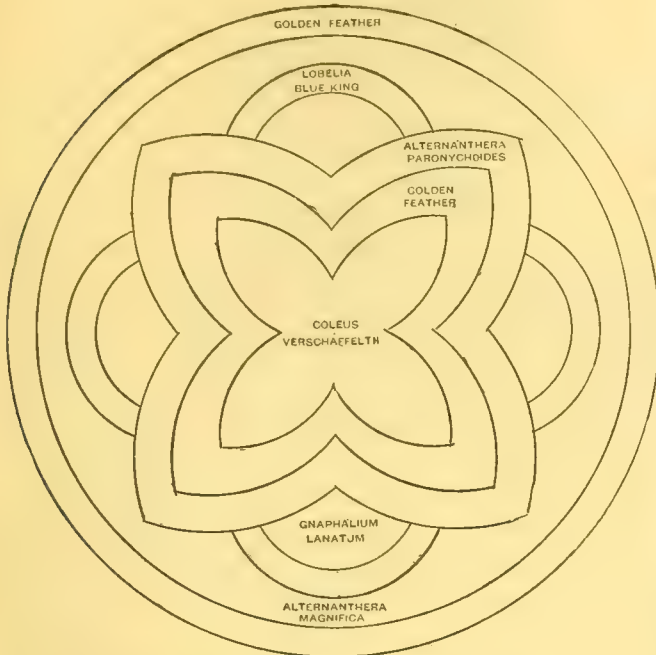
OBITUARY.

PROFESSOR JAEQUEMYS.

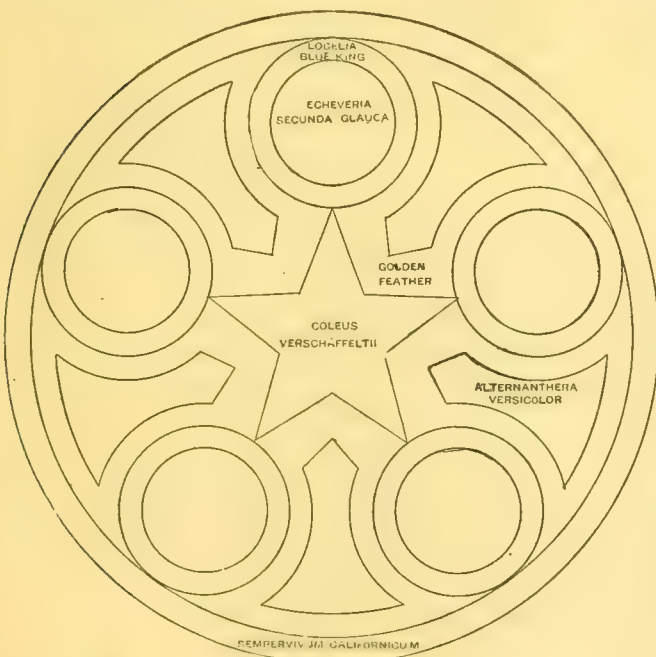
In the October number of the *Bulletin d'Arboriculture*, published at Ghent, the death is announced of Professor Edouard Jaquemys, president of the Provincial Society of Agriculture of Eastern Flanders, and member of the Commission for the Encouragement of Agriculture in Belgium. M. Jaquemys died on the 31st of August, at his chateau of Menderhout, in the sixty-eighth year of his age. His various works on rural chemistry, and on the general principles of improved cultivation, are well known. His name is also closely associated with all recent attempts to improve the status of agricultural labourers, and to raise their position in the social scale. When it was proposed by the city of Ghent to establish a town district entirely composed of dwellings for horticultural and agricultural labourers—M. Jaquemys, who had recently erected a number of detached dwellings specially adapted to the wants of such a class, opposed the proposition in the following remarkable words:—"We have often had to listen to the remark that the labourer finds himself entirely isolated, among the different classes of organised society, as though he were a pariah. To lend official sanction to this too well-founded observation by building a town district entirely devoted to the dwellings of horticultural and agricultural labourers would be the consecration of that allegation by the erection of a permanent monument. The labourer must not be thus forced into exclusive contact with his own class alone, which would tend to discourage him, and unwholesomely curb that legitimate ambition which engenders ideas of order and economy; while contact with the superior artisan, who has once been a workman himself, and risen to a higher position by industry and economy, cannot but produce a salutary effect upon his character."

FLOWER BEDS AT THE CRYSTAL PALACE.

THE following are representations of two of the carpet beds which have been so much admired in the grounds of the Crystal Palace, during the past season. This system has much to recommend it, especially as it is so useful during the later part of the summer and autumn, after



the Pelargoniums and Calceolarias have done flowering. Our engravings show the manner in which these are planted better than any description. As will be seen, the colours were brightly contrasted with each other, and these beds, which we had an opportunity of seeing



on several occasions, were very beautiful and effective in every way, and may serve as examples for intending planters next season. I propose to send you some other plans of the beds in these grounds, which were so well-arranged this season by Mr. Thomson.

Kensington Gardens.

N. COLE.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

NOVEMBER 11TH.

THIS exhibition—the last of the present season—was unusually interesting. Chrysanthemums, both in the form of plants and cut blooms were well represented, and the show of fruit was undoubtedly the best of the season, especially as regards Apples and Pears. The vegetables too, which competed for Messrs. Carter & Co.'s prizes were all of remarkably fine quality, as were also the Potatoes and Celery, shown for comparison, from the Society's garden at Chiswick, and also the collections of Cabbages and Beets, exhibited by Messrs. Carter & Co.

Chrysanthemums—These were for the most part remarkably well grown, and effectively staged in the centre of the conservatory. Mr. J. Douglas, of Loxford Hall, had the best Pompons, and most remarkable specimens they were, being profusely flowered, and, what is of equal importance, they were well furnished with fresh foliage down to the pots. Among them the following varieties were especially good, viz., Lilac and white Cedo, Nulli, James Forsyth, a brilliant bronze, and very effective; Golden Circle, yellow; Hélène, rosy-lilac; Aurora Borealis, a distinct variety of a rich warm brown colour; President, purple; St. Michael's, rich golden yellow; Madame Montell, one of the best of the Anemone-centred class, having a white ray and a golden disc; Saloman, bright lilac; Brilliant, rich crimson, in the way of, but scarcely so effective as Bob, the latter being a deserved favourite with all exhibitors; associated with these was Antonius, a distinct Anemone-flowered variety, with a golden ray and bright orange disc; these were compact shield-shaped plants. Mr. Harding staged half-a-dozen cone-shaped specimens remarkably well furnished; and Mr. Butcher, of the Priory, Hadley, near Barnet, had a well-grown group, in which a plant of Andromeda was conspicuous; this variety is of a decided lemon-yellow colour, and very effective. Mr. Fox, Old Charlton Gardens, Kent, had the best standards, prominent among which were Sunset, a rich bronze-tinted variety and Madame Martha, a good white. Of large-flowered, or show varieties, the dozen specimens staged by Mr. James, gardener to W. F. Watson, Esq., of Isleworth, were models of skilful culture. Among them the following were in every way excellent, viz., Mrs. Halliburton, creamy-white, a fine full incurved flower; Jardin des Plantes, a bright yellow, not to be beaten either in foliage or flower; Julia Lagravere, a rich crimson, in the way of Bob, but larger; Faust, purple; Empress Eugénie, fine flesh; Mrs. G. Rundle, white golden; Eagle, rich bronze; and Lord Derby, bright purple. Mr. Hall, gardener to W. Stevens, Esq., Springfield, Brixton, furnished a well-grown collection, conspicuous in which were Guernsey Nugget, lemon-yellow; Prince of Wales, maroon, shaded with silvery lilac; Mr. Gladstone, a fine incurved bronze; and Mrs. G. Rundle. Messrs. Cutbush & Sons, in addition to a fine collection of vigorous well-flowered specimens, showed a splendid plant of Mr. G. Glenny, a soft golden yellow sport from Mrs. G. Rundle; and Messrs. Dixon, of Amhurst Nursery, Hackney, had a good plant of Mrs. Rundle, unusually well flowered. Mr. J. Douglas staged a well-grown plant of the latter variety. It is worthy of note that many of the exhibitors failed on account of their plants being badly trained. Cut flowers were well represented. Mr. E. Smith, of Bristol House, Putney Heath, carried off the first prize with some splendid flowers, among which were the following viz., Alfred Salter, a fine rosy-lilac; Golden John Salter, a fine bronzy-yellow; Empress of India, white; Venus, fine lilac-purple; White Venus, and Lady Slade, the last a fine lilac flower. Mr. J. H. Hinnel also staged some splendid flowers, a trifle past their best, while Messrs. Cutbush & Sons had a splendid stand of twenty-four blooms.

Orchids.—These were not so well represented as we have seen them; but both Messrs. Veitch and Williams contributed some rare and valuable species. The first-named exhibitors had *Barkeria Lindleyana* var. *Centrae*, a charming winter-blooming plant; *Masdevallia amabilis*, a slender-growing species, of dwarf habit, with crimson flowers, and a white variety of *Odontoglossum Roëzii*; the last is very beautiful and a worthy companion to the white variety of *Lycaste Skinneri*. Mr. Williams had a fine plant of *Oncidium lanceanum* in perfect health, and several well-bloomed plants of the beautiful bright rosy-flowered *Calanthe Veitchii*. A splendid plant of *Vanda cœrulea* was shown by Mr. Smith, gardener to C. Lane, Esq., Badgemore, Henley-on-Thames. It was in the most perfect health, having two "leads," and bearing five spikes of delicate mauve-tinted flowers. The same plant was exhibited last year with four spikes, on which were thirty-eight flowers, this year the total number is sixty. Although by no means the largest, it is nevertheless, one of the most perfect examples of good cultivation we have seen, and what is important to amateurs it has been grown in a cool plant stove along with ordinary tropical decorative plants.

Miscellaneous Subjects.—Mr. B. S. Williams contributed a splendid group of Orchids, Palms, and other fine foliage plants, including *Ficus Parvifolia* and *Adiantum gracillimum*, to which we elsewhere refer. Messrs. Henderson exhibited flowering plants of *Sonerila Hendersoni* and its silvery-leaved variety, both bearing delicate lilac flowers with yellow anthers. The same firm also staged a fine orange-scarlet *Tritoma*, erroneously named *caulescens*, it was probably *T. Rooperi*; Mr. Green, of Reigate, who also staged the plant, informed us that it is invaluable for winter conservatory decoration. A collection of tree Carnations, sent by Messrs. Henderson, were much admired, and, indeed, few plants are better suited for winter vases and bouquets. Mr. Clarke, of Twickenham,

inaugurated the Cyclamen season by exhibiting a splendid batch of richly-coloured varieties, while Messrs. Standish & Co. and Mr. Turner staged some well-flowered Bouvardias. Mr. Turner also furnished an interesting collection of Ivies in pots.

Fruit.—Grapes were well represented, the principal exhibitors being Messrs. Lane, Mr. Meredith, Mr. Wildsmith, and Mr. Cole. Messrs. Lane had splendid bunches of Muscat of Alexandria and Muscat Hamburgh. Mr. Meredith had Gros Guillaume (Barbarossa), weighing 6 lbs. 4 oz., and Trebbiano, weighing 4 lbs. Mr. Wildsmith furnished a splendid bunch of Gros Colman, 5 lbs. 12 oz. The same exhibitor had three fine clusters of Lady Downe's, the total weight being 8 lbs. 14 oz., and the quality in every way perfect. Pines were limited in quantity, but the quality was above the usual average at this season. Mr. G. Ward, gardener to T. N. Miller, Esq., Bishop's Stortford, staged a fine symmetrical fruit of Charlotte Rothschild; and a splendid pair of smooth-leaved Cayenne came from the Royal Gardens at Frogmore, where this useful variety is grown largely. Pears were especially fine, some of the specimens of Uvedale's St. Germain (Belle Angevine) weighing from 3 lb. to 4 lb. each. The principal prizes for Pears went to the Jersey growers—a circumstance which caused considerable dissatisfaction among English growers. Separate classes should be formed for foreign produce. One English grower, Mr. Scott, of Meriott, had half-a-dozen splendid well-coloured specimens of Uvedale's St. Germain, weighing together 16 lbs. Dessert Pears of fine quality came from Mr. Langelais and Mr. Pluck (both Jersey Growers), Mr. Thomas, and Mr. G. T. Miles. The last-named exhibitor had half-a-dozen dishes of splendid quality, which were considered by many to be the best Pears shown. The following varieties were exhibited in splendid condition—viz., Chaumontelle, highly coloured, from many exhibitors, the Jersey specimens being the largest; Beurré Diel and Glou Morceau, both well-known kinds. Doyenné du Comice from several growers, large and fine, and there were nearly a dozen splendid dishes of Marie Louise, all in a state of remarkably good preservation for the season. Duchess d'Angoulême was, in one or two cases, very fine, Mr. Miles's dish of it being superbly finished. Beurré Bosc, Huyshe's Victoria, Van Mons, Leon Le Clerc, Duc d'Angou, Easter Beurré, Beurré Batchelier, and Matthews' Eliza, were well represented, together with others too numerous to name. Apples—both dessert and kitchen varieties—were large and fine. The principal prizes for collections of dessert kinds went to the Jersey growers, who had, in some cases, remarkable specimens. In the first prize collection were superb examples of Court Pendu Plat (of which, however, one English grower, Mr. Welsh, of Calcot, had a single dish still finer) and Blenheim Orange, large and richly coloured; Ribston Pippin and Golden Russets were also very fine; in this class, for half-a-dozen varieties, Mr. C. Ross, gardener to C. Eyre, Esq., of Newberry, had some splendid fruit, his dishes of Blenheim Orange, Golden Reinette, Cox's Orange Pippin, Margil, and Scarlet Nonpareil, being remarkably fine. Single dishes were well represented, and some wonderful fine examples were shown of Ribston, Court Pendu Plat, King of the Pippins, Golden Pippin, and Margil. Kitchen Apples were altogether excellent; Mr. Rutland, Goodwood, staged a collection of eighteen varieties of excellent quality. Among these were highly-coloured Wellington, Blenheim Orange, Lincolnshire Reinette, Flower of Kent, Nelson's Glory, and Norfolk Beefing. The heaviest dish of six Apples came from Mr. C. Haycock, who showed Belle Dubois, weighing (the six) 5 lbs. 12 ozs., and Mr. Bailey, of Wimbledon, had Reinette du Canada, six of which weighed 5 lbs. 11 ozs.

Miscellaneous Fruits.—Mr. Sage, of Ashridge, sent a splendid cluster of Bananas in fine condition, the fruit being of a bright golden colour, and richly perfumed. Mr. R. Gilbert, of Burghley, exhibited a handsome Apple named Beauty of Barnack, and a bright scarlet fruited Solanum, which promises to be useful for winter decorative purposes. Mr. Earley contributed fruiting branches of an improved Bullace Plum, which will be useful for preserving purposes. Mr. Jas. McDonald sent a large Quince-shaped seedling Pear named Gloria Mundi, and Mr. Pearson, of Chilwell, furnished two dishes of Grapes, Chilwell Alicante, a distinct black variety, of good flavour, having compact bunches, and oblong berries. A white variety raised from the same parents as Golden Queen, and named Mrs. Pearson, received a certificate. Mr. Wells, of Redhill, sent an exhibit of Prince Albert Pear, a splendid variety, delicious in flavour; and Mr. W. Gardiner, of Eaitington Park, Stratford-on-Avon, sent a fine seedling Apple with tender juicy white flesh.

Vegetables.—These were excellent in quality, Potatoes, Celery, and Cabbages being well represented. Messrs. Carter & Co., had a fine collection (sixty-six varieties) of Potatoes not for competition, including nearly all the best varieties in cultivation, and a still larger collection of 110 varieties came from the Royal Horticultural Society's Gardens at Chiswick, together with a named collection of Celery. The prizes offered by Messrs. Carter, were well contested by three exhibitors. Among these Mr. Pragnell, of Sherborne Castle, Dorset, had London Flag Leeks, good Cardoons, Model Potatoes, Savoy's Carter's Dwarf Mammoth Cauliflower, Giant Rocca Onions, very fine, James' Intermediate Carrots, and Supreme Tomatoes. Mr. Osman, of Sutton, had also a good collection, consisting of Savoy's Beet, Trophy Tomato, Salsafy, Scorzonera, Leeks, Turnips, and Potatoes. Mr. Lumsden's Cardoons were very fine, as were also his French Beans and Tomatoes. Messrs. W. Cutbush & Sons, sent a small collection of Onions, among which was Oscar, which was said to be a new and superior variety. Mr. Lumsden's collection of Potatoes (ten varieties) was a very good one, and contained excellent examples of Ashtop Fluke, Carter's Main Crop, Sutton's Red-skin Flour-ball, and other well-known varieties. A collection of Mr. Penn's new seedling varieties, was also shown, not for competition.

First-class Certificates were awarded to the following varieties:—

Chrysanthemum Duchess of Edinburgh (Veitch).—A beautiful rosy flower, intermediate between the Japanese and Anemone-centred types. It is quite distinct, and will soon become a favourite for decorative purposes.

Chrysanthemum The Cossack (Veitch).—A fine Japanese form of a rich bronze colour.

Chrysanthemum Gold Thread (Veitch).—A very distinct and beautiful flower of the Japanese type. The florets are very slender and wiry, being of a rich bronze colour, tipped with rich golden yellow.

Anthericum Williamsii (Williams).—A very pretty variegated plant, from the Cape of Good Hope, with green strap-shaped foliage, distinctly margined and striped with creamy-white or pale yellow.

Grape Mrs. Pearson (Pearson).—This is said to be a fine new variety, and in appearance resembles Royal Muscadine, but is larger in both bunch and berry.

Pear Pitmaston Duchess de Angoulême (Kemp).—A very fine variety of delicious flavour, well deserving a place in the most select collection of choice melting Pears.

Pear Lucy Grieve (Grieve).—A fine variety, ripe in October, and well worth culture as a richly-flavoured variety, juicy and delicious in every way. It is of English origin, having been raised at Culford.

NOTES AND QUESTIONS.

[The following notes and questions came to hand or were answered too late for insertion in their several departments.]

Dacrydium Frankini.—This graceful New Zealand Conifer, long ago stated by Mr. McNab, in THE GARDEN, to be hardy, stood out the past winter at Glasnevin without injury, and is now in perfect vigour there.—V.

Duke of Edinburgh Rose.—This Rose is in charming condition this month; even as far north as the confines of the Low Peak it is flowering brilliantly at this date, distancing, in that respect, all competitors.—WILLIAM HUDSON, Chase Cliffe, Derby.

Cut Flowers not Preserved by Sal-ammonia.—I have placed flowers in sal-ammonia and water in the proportion of five grains to a pint and a-half of water, and the result is they have not kept any better in this mixture than other blooms placed at the same time in cold spring water.—A. HASSARD.

The Winter-flowering Clematis.—The pretty and curious Clematis cirrhosa, figured at p. 425, is now opening its solid-looking pale white buds at Glasnevin, and promises to be full of bloom, though the specimen is an old and almost worn-out one. It is a valuable plant for walls, bowers, root-work, large rock-work, sunny banks, and hedges in mild districts.—VIRATO.

Sarracenia purpurea at Glasnevin.—This plant, which has now stood a good many winters in the bog at Glasnevin, flowered freely during the past summer. The American Pitcher Plant has thus been proved by Dr. Moore to be as hardy in an Irish, as in a New Jersey, bog. It can, in fact, be easily grown in any part of England or Ireland.

Darlingtonia californica.—Of the many plants of Darlingtonia brought to this country of recent years, few seem to have lived, and the only really good example of this plant in a cultivated state we have seen is with Dr. Moore, of Glasnevin, where there is a plant of it in vigorous health, one of its pitchers being 18 inches long.

Abelia triflora.—This lovely and sweetly-scented plant is quite hardy at Glasnevin, its last flowers have just now faded after having been in bloom several months. It forms a well-shaped free-growing shrub, about 10 feet high. It may have been noticed as a striking wall-shrub at Kew, but it is even finer seen growing in the shrubbery, as in the Dublin Garden. The graceful Abelia floribunda is also quite hardy at Glasnevin against the greenhouse walls.

The Paris Red Flageolet Dwarf French Bean.—This is nothing more or less than the variety that has been placed before the public as Canadian Wonder; but, under whatever name it is held, it is really good; being equal in quality to any French Bean in existence, an immense cropper, and fit to send to table in a larger state than others. The weight of crop it produces is unequalled. It is a variety that ought to be universally grown, and cannot fail to give satisfaction in quality, appearance, and profusion of crop. For market it will become, as it gets better known, a general favourite.—T. BAINES.

Cannell's System of Heating.—It may not be out of place, perhaps, to state that we have lately adopted this system of heating one of the Vineries here. It consists in making the water travel along the two bottom pipes first, and then return to the boiler by the top ones, thereby making the return the flow. I can positively assert that, in our case, less firing is required than under the ordinary method, and that the water returns to the boiler in a hotter state, thus increasing the amount of heat to nearly double that which we had before we made this alteration.—H. SPREIBER, Ettington Park.

Fansy Miss Maitland.—Allow me to assure your correspondent "J. M." that I am not dissatisfied with this white bedding Fansy without good reason. My stock of it came direct from the firm who first sent it out, and I found that during the past spring and summer nearly one half of the plants produced blooms very much discoloured with purple, which, of course, is a serious drawback in a white self-coloured Fansy. At Chiswick, this summer, four plants of it were grown, and two of these had discoloured blooms all the season. The plant has a good dwarf habit, and if its flowers were constant it would, undoubtedly, prove a capital white bedder.—A. D.

A Monstrous Lilium auratum.—Monstrous forms of the common Japan Lily (L. speciosum) are well known, as they have become so fixed that bulbs producing monstrous stems are offered for sale. We (American Agriculturist), however, never saw a monstrous Gold-banded Lily (L. auratum) until Messrs. Thorburn & Co. recently sent us a specimen. In this, as in the others, the stem is several inches broad, and flattened, as if what should be several stems were soldered together, the upper portion being clothed with flowers as closely as they can be packed. This stem has been estimated to produce considerably over a hundred medium-sized blooms, and it is altogether one of the most wonderful specimens of floral abundance that we have seen.

Christie's Self-protecting Broccoli.—By a clerical error (see p. 437) I am made to say that I obtained seeds of this from Hull. What I did say was that the stock of it had passed into the hands of Mr. Dixon, of Hull. I was one of the few entrusted with the proving of this Broccoli for the last two seasons, and I wrote respecting it as I found it. It was sent to one of the Royal Horticultural Society's meetings, but, unfortunately, arrived too late; the Rev. C. Whichcote, to whom Mr. Christie is gardener, has letters from the committee regretting the mishap, and speaking of the Broccoli in favourable terms, and I must repeat that it is the finest Broccoli I ever saw or tasted, growing from 6 to 13 inches in diameter, and withstanding our hardest winters to all appearance.—R. NISBET, Aswarby Park, Fulkingham.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FORCING HARDY PLANTS FOR WINTER FLOWERING.

ALL those perennials which, in the open air, bloom early in spring, are suitable subjects for forcing, and to the greater number of these the following cultural remarks are applicable. In spring, after they have flowered in the open air, the specimens intended for forcing should be potted, with good balls, in open loamy soil, or in a mixture of sandy loam and leaf mould, or heath soil, and plunged, during the following summer, in an open position. Here they should be watered abundantly, but no liquid manure should be given. At the approach of autumn, those plants whose leaves have withered should receive no more water. In rainy weather the pots should be laid on their sides, and after they have endured a little frost, the plants should be removed into a cool frame. Those kinds whose leaves have not withered, such as *Saxifraga*, *Vinca*, &c., should be watered in autumn, but only moderately, and those kinds which, in autumn, have begun to form flower-buds, and even flowers, as, for example, the sweet-scented double Violets, should be watered at that season whenever the soil is dry. With few exceptions perennials intended for winter flowering should be brought into bloom in a temperature not exceeding 45° to 50° Fahr., in a frame, pit, or low greenhouse. When the flowers begin to appear, it will be of service to the greater number of these plants to give them a watering with liquid manure once or twice. All perennials may be forced several years in succession. After forcing, they should be placed out-of-doors in spring, and treated during the summer as in the year before. In the following enumeration no allusion is made to kinds like the already popular Lily of the Valley.

Perennials for Winter Forcing.

Adonis vernalis.—In December this plant should be placed in a cool frame; when the new growth commences the plants should be set in a pit, in a temperature of from 45° to 50° Fahr., where they will come into bloom; no liquid manure should be given. The stems grow about 9 inches high, and the flowers are of a brilliant golden-yellow.

Anemone nemorosa fl. pl. and **A. ranunculoides.**—Two of the earliest spring flowers of our woods, the first with white, and the second with yellow, flowers. They require the same treatment as *Adonis vernalis*. Still finer is *A. apennina*, which should be potted in a mixture of heath soil and loam; and, treated like the preceding, when it will come into flower in about fourteen days after the *A. nemorosa*.

Aquilegia glandulosa and **A. vulgaris.**—Of the numerous species of *Aquilegia* these two are the best for forcing; the first is a native of the mountains of Siberia. It has produced many varieties, of which the form known as *A. jucunda*, with white petals and handsome sky blue sepals, is the finest. Of *A. vulgaris*, whose varieties in form and colour are very numerous, the double-flowered kinds are to be preferred for forcing. The fine variety of *A. glandulosa*, which is known as *A. g. jucunda*, should not be placed in much heat, as it cannot bear a high temperature, even in the early stages of its growth.

Caltha palustris fl. pl.—Only the double-flowered variety of this well-known plant, which grows in boggy ground, and has glistening deep yellow flowers, is to be recommended for forcing. It should be treated in the same way as *Adonis vernalis*, only that it should have loamy soil mixed with peat-soil; it should not be allowed to become very dry in autumn, and when blooming, and preparing to bloom, the pot should be set in a saucer so that the ball may be kept quite moist.

Dielytra spectabilis.—One of the handsomest perennials from northern China, producing, in great abundance, its peculiar, large, pendant, heart-shaped, and flatly-compressed flowers on bushy stems, from 1½ to 3½ feet high. Strong specimens should be selected for forcing, and potted in pretty large pots.

Epimedium rubrum.—A pretty dwarf plant from Japan, with flower-stems scarcely a foot long, and handsome red and

white flowers. It is forced in the same way as the *Anemones*. In addition to this finest of the species for forcing, we also recommend for that purpose *E. macranthum*, which has delicate white flowers; *E. Musschianum*, *E. pinnatum*, with yellow flowers; and *E. violaceum*, which has pale violet flowers. None of these should be placed in great heat, but gently pushed on in a frame or pit, so as to bloom about the beginning of March.

Helleborus caucasicus var. colchicus and **guttatus.**—Of the numerous Christmas Roses, these two are the best for winter-flowering. The first has brownish-red, and the second white, flowers tipped with red. The common Christmas Rose (*H. niger*), which is a native of southern Europe, and has large creamy flowers, may also be used, and particularly its large variety *maximus*. Though these bloom well out of doors in some districts, it is, in all cases, better to have good specimens of them in pots.

Hemerocallis Middendorffii.—A native of eastern Asia, with closely-crowded golden-yellow Lily-like flowers; treatment, the same as for *Aquilegia*. The other species of *Hemerocallis* are unsuitable for forcing.

Hepatica triloba, with its single and double white, blue, and carmine-flowered varieties, and *H. angulosa*, should be planted in a mixture of equal parts of leaf mould or heath soil and loam. The white-flowered variety of *H. triloba* and also *H. angulosa* are the only ones which will bear a little more heat than the others, and they may be brought into bloom by the middle of January. Late in autumn they should not be kept too dry, and should not be exposed to severe frost, otherwise their leaves will be spoilt.

Hoteia japonica.—A pretty dwarf plant about a foot high, with much-divided leaves, and handsome panicles of delicate white flowers. It is forced in the same way as the *Dielytras*, and can be brought into bloom by Christmas or the beginning of the new year, and continuously.

Iris florentina, **I. flavescens**, **I. pumila**, **I. Sambucina.**—All these can be forced into early bloom under the same treatment as that given for *Aquilegia*. *Iris pumila* may be brought into flower in January. The other kinds will flower in April, if grown in a warm pit.

Omphalodes verna.—In autumn the plants should be placed in a frame sheltered from frost, and soon afterwards removed to a temperate forcing pit, where they will unfold their beautiful sky blue flowers in the middle of December.

Orobis vernus.—Should be placed, in December, in a cool frame free from frost, and in January may be removed to a warm pit, where the blue and red flowers will appear in February.

Pæonia albiflora fl. pl., **P. officinalis fl. pl.**, **P. tenuifolia fl. pl.**—The pretty herbaceous *Pæonies* with double flowers, serve both as ornaments for the garden and for blooming indoors in April. About New Year's Day they should be placed in a temperature of from 40° to 50° Fahr. *P. tenuifolia* comes earliest into bloom, and does not require a large pot. It is, therefore, most to be recommended. A light watering with liquid manure should be given during flowering time.

Polygonatum vulgare (Solomon's Seal).—Its handsome foliage, on stems nearly 2 feet long, and its white pendent flowers, give this plant a very attractive appearance. It prefers a mixture of half leaf mould and half loam and sand, and blooms in April under the same treatment as has been given for *Aquilegia*.

Primula cortusoides.—A native of Siberia, with lilac flowers, *P. farinosa*, which grows in moist places on the hills of northern Europe, and on the Alps, and has rose-coloured flowers, and the underside of its leaves covered with a white mealy powder, and *P. viscosa*, a native of the Alps with deep red flowers, are to be recommended above all other species for flowering in March and April. In January they should be placed near the glass in a temperate forcing house, in a rich mixture of heath soil or leaf mould and loam.

Trollius asiaticus, **T. altaicus**, **T. europæus.**—The first two kinds are only found in Siberia, and have glistening orange-coloured flowers. The last is distributed over the whole of Europe and Siberia, and has sulphur-yellow flowers. Treatment the same as for *Aquilegia*. M.

NOTES OF THE WEEK.

— DR. WOODMAN writes to us to say that in Lucombe Pince & Co.'s nursery at Exeter there is a plant of *Lapageria rosea* which has grown on an outer wall there for many years, and which is now in full bloom, bearing about 100 splendid flowers of unusually good substance. When the frost is very severe, it is given a little protection, but otherwise it has to take care of itself.

— A PLANT of *Davallia Mooreana*, at Drumlanrig, has produced and is at present furnished with 148 fully-developed fronds, which have a spread of 8½ feet. This unique specimen is grown in a 22-inch pot, and is probably the largest in Europe. It is one of the best and most beautiful of all the *Davallias*.

— MR. ATKINS, of Painswick, has brought under our notice some slate labels which he has used in his garden for several years, and prefers them to any others. In shape they are like the common wooden label. They are painted white, and, whilst the paint is wet, then marked with a black lead pencil or a pointed implement of any kind. The manufacturers are Messrs. Sessions and Sons, of Gloucester. Mr. Barr, we understand, intends trying them in his grounds at Tooting.

— WE have received from Messrs. Neumann & Co., of Great Tower Street, a sample of the new Balata gum, to which reference was made last week (see p. 451). This gum, however, being non-elastic, cannot be used in place of indiarubber, but for articles generally made of the purest gutta percha it will answer perfectly. It, however, requires totally different treatment from either india-rubber or gutta percha.

— A NEW temperature indicator has just been brought under our notice by Mr. Clement Marsh, Chetwynd House, Wolstanton, Stoke-on-Trent. One form of the instrument, applied to an ordinary thermometer, seems well suited for plant structures of all kinds; it is so contrived as to operate on an alarm bell at a minimum or maximum temperature. The bell-ringing continuously arouses the attention of the gardener, and at once proves to him, that the temperature is either too high or too low. The bell can be fixed anywhere, and at any distance from the instrument; it is a mere question of length of wire. As a fire detector it promises to be invaluable.

— WE have received flowers, in beautiful condition, of the following plants, all of which are hardy and naturalised in Mr. Ellacombe's garden at Bitton, viz., *Solanum jasminoides*, a beautiful white-flowered climber, with fresh green foliage and Jasmine-like flowers; *Iberis semperflorens*, a dwarf fleshy-leaved Crucifer, much prized on the Continent as a pot plant on account of its delicately-fragrant white flowers, which are borne in dense clusters; the true Jalap plant (*Exogonium Purga*), with rich purple *Convolvulus*-like blossoms; *Gaura Lindheimeri*, a tall whitish-flowered herbaceous plant, much grown in French gardens, and recently flowering on the rock-work at Kew; *Abutilon vexillarium*, a well known half hardy shrub, which bears a profusion of bright orange-scarlet and yellow flowers. Associated with these were also *Brugmansia sanguinea*; *Saxifraga Fortunei*, a useful kind with spikes of showy white flowers; the charming winter-blooming *Clematis cirrhosa* (figured at p. 425), a useful species which bears large drooping greenish-white bell-shaped flowers in profusion; *Allium suaveolens*, with Thrift-like heads of creamy-white flowers; and *Erica codonodes*, a dwarf and very pretty winter-flowering Heath—all bright and well coloured for this season of the year.

— MR. G. SHAW LEFEVRE, in a letter to the *Times* the other day, with reference to the decision of the Master of the Rolls last week in the Epping Forest cause declaring enclosures since 1851 to the extent of 3,200 acres to be illegal, calls attention, among other cases of disputed common rights, to that of Hampstead Heath, and points out that the purchase of this property by the Metropolitan Board of Works for £50,000 was not only unwise but unnecessary; for, had the suit then pending with the lord of the manor been suffered to take its course, there can be no doubt now as to the result being in favour of the commoners. It is on every account to be regretted that a compromise was effected before the legal points involved in the case were brought to an issue; for by some process many of the most picturesque and beautiful portions of the Heath not included in the bargain with the Board of Works were enclosed at the time of the purchase, and are now lost to the public, who, there is every reason to believe, after the decision in the Epping case, might otherwise have had the enjoyment of them for ever. The little village greens, also contiguous to the Heath, which from time immemorial were the favourite playgrounds of the poor, have, in like manner, within the last three or four years, been appropriated for private uses, and it is a question well worth consideration, whether some attempt might not be made in this and other similar instances to test the legality of the

enclosures, and to restore to the public at least such lands as have not yet been built upon, and which may appear to have been improperly taken from them.

— THE Thames Embankment is gradually becoming the handsomest Boulevard in Europe. When its trees and gardens have had time to develop themselves, the embankment will be far finer than anything of the kind in Paris or elsewhere.

— A DIRECTORY of BOTANISTS, comprising lists of gardens and directors of gardens, and professors and curators, of the whole world, has been published under the superintendence of Professor Morren, at Liège. This is no new undertaking, but it is as yet insufficiently known, and is so peculiarly useful that we advise all who are likely to need to consult such a work to make note of it at once. It contains the names and addresses of about 750 botanists.

— THE report of the Potato Disease Committee of the Royal Agricultural Society has been recently published. It will be recollected that three years ago Earl Cathcart offered a prize of £100 for essays on the prevention of the disease. Although no fresh practical information was elicited, and it may, perhaps, be said no direct good came from this well-meant offer, the Society took the subject up and offered prizes for Potatoes reputed to be proof against disease. Two prizes were offered for the commencement of this year, for Potatoes of varieties already known, and two are to be awarded five years hence for varieties that may be produced by cultivation before that period. Six different varieties were sent in, one ton (twenty bags of one cwt.) of each. The Society arranged to have these practically tested. Twelve stations in England, four in Scotland, and four in Ireland were selected, and 1 cwt. of each variety sent for planting, of these so-called disease-proof Potatoes. During the summer the botanic referee of the society visited all the localities, and in all cases disease was found. Much valuable information is likely to arise from the statistics that have been collected, for although it seems that no indication is given of how the disease can be prevented, yet, under certain conditions, principally influenced by moisture, its effect is but small.

— GENERAL CHANZY, this past season, issued a circular to the generals of division and prefects in Algeria, directing them, in dealing with grasshoppers, to adopt the method which has been successfully employed in Cyprus. This comprises systematic seeking and destroying of the grasshoppers' eggs, and also attacking the crickets on the march. It seems that before becoming full-blown grasshoppers the crickets, about a month after they are hatched, begin to march, and this they do in large, compact masses for a period averaging some twenty-seven days, during which they never swerve from the line of route once adopted. The people of Cyprus take a band of silk, from 65 to 70 centimetres high and 100 metres long, and this they tie vertically to poles firmly fixed in the ground, the upper part being waxed or bordered with oil silk to a width of about 10 centimetres, and the earth so heaped up under it as to leave no crevice between the silk and the ground. A second band is then set up, so as to form a sort of gallery of gradually diminishing width, being at the mouth somewhat wider than the column of crickets, but only 5 metres wide at the other end, where is a trench 5 metres long, one and a half wide, and one deep. This forms the trap or "system," several of which, 100 metres long, can be placed end to end and transported to any point threatened by the invaders. All that has to be done is to wait till the column of crickets has reached the trench. Then it is covered in with earth, and nothing more is seen of the crickets.

— M. CORENWINDER has contributed to the *Société des Sciences*, of Lille, an exhaustive series of observations on the processes of respiration and nutrition in plants. He supports M. Claude Bernard's view, that the process ordinarily known as the respiration of plants—the decomposition of the carbonic acid of the atmosphere—is really a process of digestion, and that simultaneously with this, plants carry on, by day as well by night, a true process of respiration, similar in all respects to that performed by animals, consisting in an oxidation of the carbonaceous matters of their tissues. By a very careful series of analyses, performed mainly on the Lilac and Maple, M. Corenwinder determined that the proportion of nitrogenous matter in the leaves gradually and progressively diminishes from the time that they emerge from the bud till their fall; the proportion of carbonaceous matter increases very rapidly during April and May, and then remains nearly stationary till October; while that of incombustible substance increases during the whole period of vegetation. He distinguishes, therefore, two periods in the vegetative season of the plant—the first period, when nitrogenous constituents predominate, is that during which respiration is the most active; the second, when the proportion of carbonaceous substance is relatively larger, is the period when respiration is comparatively feeble, the carbonic acid evolved being again almost entirely taken up by the chlorophyll, decomposed, and the carbon fixed in the true process of digestion.

RAISING NEW KINDS OF PLANTS.

THE artificial fertilisation of plants, by means of which so many new and splendid varieties have been obtained, is an art which was but guessed at by the scientific men of the last century, and almost totally unknown to the immediate predecessors of those occupied in the various branches of horticulture. Even at the present day its principles are but imperfectly known and still more imperfectly practised; and yet such brilliant results have been obtained by comparatively rude knowledge and practice as ought to incite to more careful and accurate study and manipulation, which cannot fail to lead to rapid progress in this interesting and important branch of horticultural art—an art which is the most potent lever we possess for modifying and occasionally entirely changing the forms and general aspects of vegetable life. From the most minute herb to the stately Elm, Pine, or Oak, man is enabled, by its means, to produce an infinite variety of new forms, as to general habit of growth, foliage, inflorescence, and fruit; the new varieties so produced, at the bidding of a skilful operator, being frequently far superior to the former types, in so much that the original species of several of our most favourite garden flowers have actually disappeared before the invasion of a host of superior and far more splendid varieties obtained by the means of artificial fecundation. To the agriculturist seeking to improve his cereals and his root crops, artificial fecundation of suitably-selected species will, with skill and perseverance, inevitably crown his aspirations with brilliant success; while the commercial horticulturist, and the amateur who loves his garden and his plants for themselves, should vigorously pursue the practice of this new and wonderful art, which touches the highest and most mysterious pinnacles of vegetable physiology as with the wand of a necromancer—so great and striking are the metamorphoses which may be wrought by its means. It was by this art that M. Souchet, of Fontainebleau, produced all those dazzling varieties of Gladioli; and that M. Gerain, of Rheims, succeeded in raising his magnificent series of Petunias with both double and single flowers, which have made his name famous in the annals of floriculture; and Messrs. Caulier, of Vailly, produced their remarkable series of Zinnias in the same way. What has become of the old forms of Geranium, Coleus, Gloxinia, and Caladium? They have disappeared to make way for the magnificent array of their respective kinds produced by the magic of artificial fecundation. The results obtained by English experimentalists have been still more striking, as evidenced by the Clematis culture of Mr. Jackman, and the striking amelioration of the higher classes of fruits by Mr. Rivers.

Fertilising by artificial means is like the opening of a mine of some precious and previously unknown product, which is inexhaustible, but of which only a few straggling veins have as yet been laid bare. How much pleasure and unalloyed gratification and satisfaction may be derived from the practice of an exquisite art, by means of which we may change the face of Nature itself, making it at once more beautiful and more useful to our race; by the production of new and more robust developments of our grandest forest trees, of nobler forms among our fruit trees, bearing more abundantly, richer and more delicious fruit, and of forms of culinary vegetables of such unproved growth and succulence that the present varieties will drop out of cultivation, and be no more heard of in the annals of horticulture, except as "pre-historic" developments, as it were destined to be eventually forgotten in the annals of the art of gardening.

The results of artificial fertilisation in England and Belgium appear so remarkable to those who thoughtfully consider the powers of this astonishing art, that they have been deemed, by M. Lambin, "nothing less than prodigious." The best works that have been published on this deeply interesting subject should be carefully read and studied by both amateurs and commercial practitioners in horticultural pursuits. M. Henri Lecoq's work, "*De la fécondation naturelle et artificielle des végétaux, et de l'hybridation*," is full of instructive matter, and imparts in an agreeable and practical form almost all that is at present known on the subject, accompanied by careful descriptions of the best methods of operating. Furnished with the knowledge thus acquired, the manipulator may fearlessly engage in the enterprise of raising new varieties in every class of the vegetable kingdom; and need not be troubled with doubts that Nature may get tired by his insatiate demands upon her ever prolific powers, for they are inexhaustible.

There are two distinct kinds of vegetable fertilisation—the natural and the artificial. In the natural one, the pollen of the male flower falls upon, and fertilises without extraneous aid, the reproductive portions of the female flower. The chief function of the general form of a flower appears to be the protection of the delicate structures immediately connected with re-production, and to place them in a suitable position to receive the necessary influences of the atmosphere and the particles of the fertilising pollen.

The ordinary floral envelope of the reproductive apparatus consists

of the calyx and the corolla. The corolla is composed of the petals, which are generally the coloured portion of the flower, and serve as the enclosure of the stamens. Where the petals are separate, as in a Rose or Daisy, the flower is termed polypetalous. Where they are more or less attached to each other, or are without any separation at all, as in the Convolvulus, they are termed monopetalous. The base of the petal or petals is protected by the calyx, or cup, which partakes of the nature of foliage, and is generally green; its divisions being termed sepals. Its function is to protect the base of the stamens, and the ovary or seed vessel. The reproductive organs consist of the pistil or female organ, and the stamens or male organs. The pistil is placed prominently in the centre of the flower, and consists of the ovary, the style, and the stigma. The ovary at the base of the pistil contains the rudiments of seeds, which are termed ovules. The style is surmounted by the stigma, which varies in its aspect and form, but is nearly always moist with a viscous secretion, to which any particles of pollen falling upon it adhere and are dissolved. The stamens, or male organs, consist of the anthers, covered with pollen, and the filaments, upon the point of which they are raised. The pollen, or fertilising powder, examined through a microscope, appears to consist of a mass of small vesicles or granules, of which the form and colour vary with every genus of plants, and often with different species of the same genus. Each granule contains a mucilaginous fluid, and this fluid is conducted by means of the stigma and style to the ovary.

When both the pistil and fertilising stamens exist in the same flower, it is called hermaphrodite, as combining both sexes; as in Peach-flower, the Apple blossom, and the Lily. When the pistil and stamens are not found in the same flower, but are in separate flowers on the same branch, the plant is called monoecious, of which the Walnut, the Melon, and the Mulberry are examples. When the male and female flowers are found on different plants, the plant is called dioecious, as in the case of the flowers of the common Hemp and Spinach, and in Palms; finally, plants are termed polygamous, which have both male and female and also hermaphrodite flowers, examples of which are the Pimpernel, the Gleditschia and others. In order that the fecundation may take effect, it is necessary that the pollen of the anthers should come into contact with the stigma. If the stigma and stamens exist in the same flower, the anthers are generally so placed as to be very near to the stigma, so that the fructifying particles furnished by the anther may fall upon the stigma, or be carried to it by insects, or other means. In aquatic plants, especially those which flower beneath the surface, special arrangements exist for the prevention of injury to the pollen by contact with the water, and in apetalous kinds the pollen is superseded by a fluid. The various means (remarks M. Lecoq) that are resorted to by Nature to ensure the successful fertilisation of plants, commends our fervent admiration, and those means are never failing, except when interrupted by extraordinary accidents. In the *Rafflesias*, of which the sexes are almost invariably situated at considerable distances from each other, the viscous nature of the pollen does not permit the action of the wind to convey it to the female flowers, which are fertilised by unconscious insects, who, deceived by the cadaverous odour of these plants, descend into the depths of the corolla, and, finding their mistake take flight with portions of the viscous matter attached to their legs, wings, or proboscis, and, deceived a second time, carry it with them into the corolla of another flower, probably a female, which is thus fertilised by adventitious aid. Often, too, insects have been the unconscious fertilisers of flowers not requiring foreign assistance. In such cases, carrying the pollen of one related species to another, and being the cause of the appearance of new hybrids, from time to time, in our gardens and orchards, long before human discovery, and the ingenuity of man, had reduced artificial fertilisation to a regular science; which, though yet in its infancy, has already led to extremely interesting, and, indeed, magnificent results. The fertilisation of plants by foreign agency, either accidental or scientific, has however, its limits. It can only take place between plants of the same group, and is generally confined to such as stand in near botanical relationship to each other; which renders it necessary to say a few words on species and varieties. A species is a botanical unity—above it is the family, below it are the varieties—as for example, Wheat is a species, but red Wheat, and white Wheat, are only varieties of the one typical species. The Red Currant, the Black Currant, the Thorny Currant, or Gooseberry, are distinct species; varieties of each may occasionally appear producing larger or smaller, or more highly coloured fruit, but neither the Red or Black Currant will ever produce single fruited varieties; nor will the Gooseberry ever produce fruit in bunches like any of the species of Currants. It is hence seen that variations of species have their fixed limits. The object, therefore, of those who attempt the artificial fertilisation of the reproductive organs of the flowers of plants, must be concentrated upon the

improvement, and not the entire alteration of the general form and character of species. With these facts in view, improvements by selection necessarily becomes the only legitimate object of the hybridiser. He must take the pollen from only the finest plants—especially those furthest removed from their original wild state. It is in this way that a continuous progress in the perfecting of flowers and fruits will henceforward be kept up in flower, fruit, and vegetable culture; and also in the various kinds of plants which form the staple of field culture.

It now remains to set before the intending manipulator the best methods of performing the operation of artificial fertilisation, and the various precautions which must be carefully observed, in order to ensure success. In the first place, it is perhaps scarcely needful to tell the operator, that to hybridise a plant, it must be artificially fertilised by another of the same genus, as for example, a white Rose by a red or a yellow one. Before operation, great care should be taken to secure the pollen from well and perfectly developed anthers of the male plant, or it may be such as will not produce a successful result when it is sought to fertilise the female plant. In general, the hybrid partakes of the nature of both parents; though, in many cases, the influence of the female parent is the greater. The selection of the species to be artificially fertilised requires much care. For instance, when it is desired to obtain an improved fruit, it should be taken into consideration, whether it is an early or a late fruit, of its kind. If late, then it should be crossed with a plant which ripens its fruit about the same time; or, if an early sort is about to be dealt with, the fertilisation should be from some other early kind; and other qualities should be observed in a similarly scrupulous manner, especially in the matters of the saccharine, farinaceous, or aromatic properties of culinary vegetables, which it is sought to improve. It has been by carefully studying the kind of amelioration required, and the subjects most likely to impart it, as well as those most likely to receive it, that such magnificent results have been already attained in this country. Another principle has to be observed. So soon as a new and very desirable variety has been obtained, its influence should be utilised at once; as new varieties are much more easily obtained from it before it has acquired that individual stability which habit eventually establishes.

Double flowers may be accidentally obtained from seed, but the results of careful selection in the fertilisation of double or semi-double flowers, in order to produce varieties still more double, is much more satisfactory than waiting for such chance varieties as may arise from unconscious fertilisation by insects or other causes. In order to improve the progressive development of any new character by selection, M. Lecoq tells us that he has sometimes fertilised double varieties, selecting both parents from already very double varieties, and that the result was the production of several new hybrids, the flowers of which were so excessively double that the buds invariably burst, and a perfectly opened flower never occurred upon the plants, as is sometimes the case in new hybrid Carnations and Pæonies. But out of the same experiment several single-flowered varieties were also produced, as though by the selection of both parents, disposed to produce a vast number of superfluous petals in each flower, the tendency had become entirely neutralised, and the offspring had returned to the original single type. As regards the respective colours of the parents in hybridisation, it has been observed that the colour of the flowers of the female parent generally predominates over that of the male. If, therefore, it is sought to obtain a hybrid bearing flowers of darker colour than those of either of the parents, the tone of colour of the flowers of the female parent should be darker than those of the male. But if it is wished to lighten the tone of colour, then, in most instances it would be well to select a female parent bearing white flowers, or, at all events, flowers of a very light colour. Sometimes the attempt to deepen, or render lighter certain tones of colour by hybridisation results in the production of striped flowers, in which the colours of both parents are preserved intact in that form—as in Tulips, Belladonnas, and many other plants.

The preparation of the subjects to be operated on is very important. In the first place, these should be placed in the most favourable position possible for maturing their seed. Secondly, it is important that the possibility of contact with other pollen than that intended to produce the kind of fertilisation required should be guarded against. In hermaphrodite plants, the anthers must be removed as soon as the flowers open. In monoecious plants the male flowers must be removed as fast as they appear; and, in dioecious plants, the plant bearing male flowers must not be allowed to remain in the neighbourhood of the female plants. Thirdly, it is desirable, both in the collection of pollen and in the artificial fertilisation effected by its means, to select only terminal or principal flowers. Fourthly, when the blossoms of fruit trees are to be fertilised, it is desirable to place the branch bearing the flowers to be operated on beneath a bell-glass, upon a

thick layer of Moss, in order to protect the blossoms from any kind of accidental fecundation. Fifthly, in preparing culinary vegetables or cereals for artificial fecundation, the plants intended for the operation should be isolated, in the remote corner of a garden, or other situation where the pollen of allied kinds would be unlikely to reach them by the interposition of insects or other causes. Sixthly, suitable instruments, such as blunt-pointed scissors, sable brushes, &c., should be provided for the amputation of stamens and other purposes. M. Brassoul, cutler, Rue Gay-Lussac, Paris, has invented a neat little set of instruments for hybridising purposes, which are a great luxury; and all that could be desired; but ordinary scissors, pincers, and a sharp penknife, in the hands of a skilful operator, are sufficiently handy—"good workmen never quarrel with their tools." In most instances the excision of the stamens immediately after the expansion of the flower will be found sufficient precaution; but, in certain flowers, the fertilisation takes place previously to their expansion, and, in such cases, it becomes absolutely necessary to make a careful incision in the unopened bud before the opening of the corolla, and to extract the stamens before the dissemination of the pollen. This operation requires neatness and precision; but, with delicate handling, it may be performed with seldom varying success; care being taken not to crush the anthers in the least degree, and not even to throw them down carelessly near the plant, as insects might carry particles to the flower about to be hybridised.

The preservation of pollen about to be used in hybridisation, will require great care, if brought from a distance. It often happens that the pollen required to fertilise a plant cannot be procured exactly at the time desired; and, if it be necessary to keep it for some time without using, the following precautions may be observed: place the collected pollen in the hollow of a watch-glass, and let it remain exposed for a few hours (but not in the sun) till a portion of its moisture has evaporated; another watch-glass of the same size may then be placed over the one containing the pollen, and made air-tight by the application of gum round the edges. As to the length of time during which it may be thus preserved, nothing precise is known, except that the pollen of some kinds of plants will keep much better than that of others. M. Haguin, of Liege, has fertilised Lilies with pollen that had been collected for more than forty-eight days—Azaleas, with pollen forty-two days old; while Camellias respond to the fertilisation of pollen that has been kept for sixty-five days. These periods are far exceeded by that of the retentive powers of the pollen of *Ceratostamia mexicana*, which after being preserved from 1866 to 1873, was successfully applied by M. Houliet, chief of the plant-houses of the Jardin des Plantes. Nevertheless, M. Bleu, well-known as the producer of a noble series of hybrid Caladiums, states his full conviction that the freshest pollen is the better. M. Haguin cuts the anthers he requires immediately on the opening of the flower, wraps them carefully in a pasted-up seed paper, and leaves them in a dry and warm situation for twenty-four hours. By that time the fecundating dust has fully ripened, and M. Haguin then envelopes it closely in thin sheet-lead, numbering and naming each kind, and placing them in a dry, but cold, situation, till required for use. M. Perrolet, reports from Guadaloupe, that the male pollen of a Date Palm (which flowers three months before the female tree), was kept during the three months required without injury.

The application of pollen should be effected in the following manner. The morning is, in most plants, the period of the day in which the stigma is best prepared to receive it. With the first rays of the sun, therefore, the operation should be performed. The only exceptions are, where the plant to be fertilised is an evening or night flowerer, in nearly all of which fertilisation is rapidly effected immediately on the opening of the flower; therefore, care must be taken to seize quickly the favourable moment. Nothing is more simple and easy than the actual application of the pollen; a small quantity of the pollen taken up with a camel-hair or sable pencil and placed gently upon the crown of the stigma is all that is necessary; that done, the operation is completed. M. Olivier Gerain, of Rheims, moistens the pollen with a drop or so of water, which is painted on to the stigma in that state, with a small sable brush, and it is by that form of application that he has produced the fine strain of brilliantly-coloured Petunias for which his establishment is so well known. When the pollen is applied to the stigma it enters into immediate communication with the viscous liquid there secreted, and is thus conducted through the tissues of the stigma to the ovules, or embryo seed, which it fertilises. This connection is no sooner consummated than the beauty of the flower begins to fade, and the brilliant corolla withers and falls; all the energies of the neighbouring parts of the plant becoming concentrated upon the development of the fruit, or seed vessel, and its contents. The seed vessel has a double function to perform, that of nourishing the seeds during their growth and ripening, and also that of protecting them from external injury. W.

THE INDOOR GARDEN.

FRUIT OF STEPHANOTIS FLORIBUNDA.

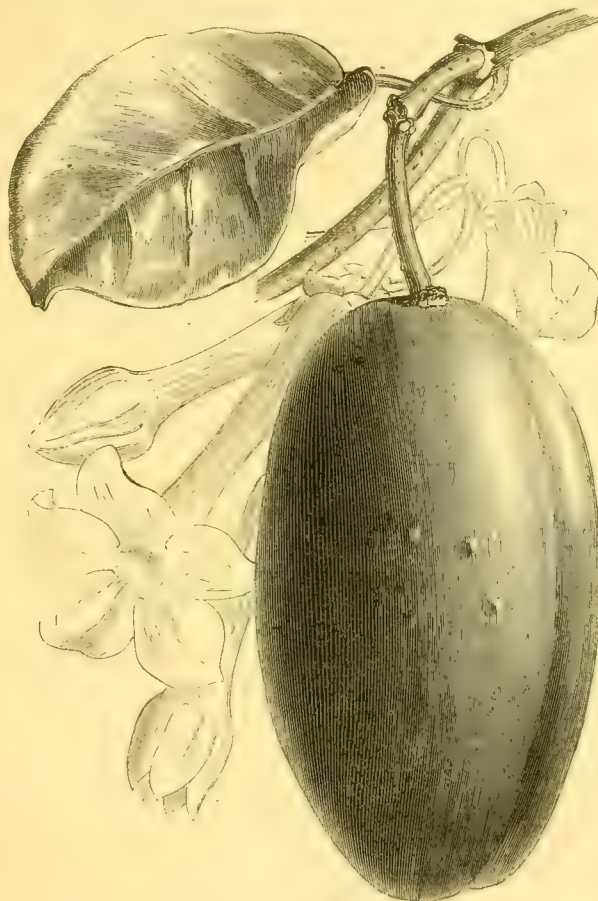
THIS well-known and exceedingly ornamental climbing plant has, ever since its introduction from Madagascar, been a great favourite, and has formed one of the most graceful ornaments of our stoves. It is, however, very rarely that it has produced its fruit in Europe. M. Carrière, the well-informed editor of the *Revue Horticole*, believes that it has fruited for the first time in Europe, during the present season, in the garden of an amateur at Pontoise. In 1868, however, we saw a plant of it bearing fifteen fine fruit, each as large as a Jargonelle Pear, in Lord Berner's garden at Keythorpe, and it has now and then fruited elsewhere in this country. The flowers of the *Stephanotis* are great favourites with bouquet makers in Covent Garden. Their pure white colour and their elegant form seem to have rendered them specially desirable for floral decorative purposes at weddings; and as a chief feature in button-hole bouquets they have become indispensable, while in wreaths and massive hand-bouquets for such occasions they seem to have partially displaced Orange-blossoms themselves. Though so well-known as a cut flower, some of our readers may know little of the entire plant, and may be glad to learn, from our engraving, something of its appearance when in fruit.

ORCHIDS AT LORD LONDESBOROUGH'S.

THE fine collection of Orchids at Norbiton, well deserves especial notice for several reasons. Most practical Orchid growers will agree with us that the less Orchids are removed from the houses in which they are grown the better; and yet no collection of plants has travelled so much as that now under consideration. When the collection was grown at Grimston Park, near Tadcaster, especial arrangements were made, and a heated railway van was employed to bring plants from it in bloom to London. Nor were they thus shifted about merely for the gratification of their owner, as, at nearly every meeting of the Royal Horticultural Society then, as now, a group of plants from Lord Londesborough's collection was staged. In spite, however, of inevitable drawbacks to growth, consequent on such transitions, the collection still remains one of the finest in Europe. Cattleyas generally look well, and at the time of our visit a plant of *C. gigas* bore three fine flowers, one having been removed for artistic purposes. It is a robust and showy variety, but will not bear comparison with the true old *C. labiata*, which we have always considered, when well grown, to be the finest of all Cattleyas. Of the last named plant a noble specimen has borne three fine spikes, or, in all, fifteen flowers. These, for size, form, and richness of colouring, we have never seen surpassed. How gorgeously beautiful this plant is!—and yet how seldom do we see it grown. Imagine great broad petalled flowers, of the softest lilac, delicately frilled and crimped so as to represent the subtle colouring in at least a dozen different shades, and these again blended into other intermediate shades with inimitable softness and delicacy. It is, however, when we come to the great frilled open-throated lip that we are most astonished—what an array of royal purple, crimson, and cloth-of-gold barred with ruby, have we there! Ruskin, in one of his books, asks, what artist ever yet painted the delicate throat of a Foxglove bell? If this, then, is so difficult, how much more so must it be to represent the ever-varying tints of these protean Orchids? We now come to a group of *Phalænopsids*, in which a vigorous plant of *P. Lowii* is furnished with a great branched spike bearing thirteen

flowers. The spike is fully 18 inches in length, and the individual blossoms are 2 inches or more across. This is so handsome that even the queen of Orchids herself (*P. amabilis*) has to yield in point of beauty. The segments of the flowers are of a soft rosy-lilac, pearl-like in lustre, while the apex of the narrow lip is of the most brilliant amethyst-purple. Mr. Denning has been most successful with this plant, which is, as most practical Orchid growers are aware, one of the most difficult to cultivate in the whole group. Here, however, its leaves remind one of those of *P. amabilis*, except that they are more sharply pointed, and are freckled with the characteristic purple dots. Side by side with the last named hung two plants of the rare *P. intermedia* Portei—perhaps the rarest, and certainly one of the most beautiful, of all cultivated Orchids. It is supposed to be either a seedling variety or natural hybrid, and only a solitary plant has as yet been discovered in its native habitat—the Philippines—while from this have been raised the plants now in cultivation, and which might be counted on the fingers of one hand.

The largest plant here is unique, and is as vigorous in appearance as a strong plant of *P. amabilis*, to which it certainly bears some resemblance in habit. It is now bearing a strong flower-spike; but the blossoms will not be open for some weeks yet to come. Some strong masses of *Epidendrum bicornutum* are making a vigorous growth, suspended in baskets near the glass, and a plant of the pretty little *Angræcum bilobum* is flowering freely. The singular "Cockatoo plant" (*Angræcum Ellisii*) has just flowered, and deserves mention as a souvenir of the late Mr. Ellis, to whom we are indebted for several showy *Angræcums*, and also for the "Lattice Leaf" plant (*Ouvirandra*). The Cockatoo plant is distinct in habit, and in its growth somewhat resembles a *Renanthera*. A plant of the best variety of *A. eburneum* is growing well, and is now throwing up a stout spike; while a fine plant of *Coelogyne Rhodeana*, with fluted pseudo bulbs and bright green leaves, is a mass of pale brown-spotted flowers. *Dendrobium Falconeri* is making plump and vigorous growth. This is one of the finest of all *Dendrobes* when in bloom; but, unfortunately, that is seldom the case. A plant of the lovely golden-flowered *D. chrysotis* (*D. Hookerianum* of the Bot. Mag.) has the finest growths of any specimen we have yet seen, these being in some cases fully 6 feet in length. This specimen is even finer than the one sold at Mr. Sam Mendel's sale; and, when strong and healthy, flowers very freely. A splendid specimen of the chaste *Cymbidium eburneum*



Fruit of *Stephanotis floribunda*.

is now showing flower, and is in perfect health. This is one of the finest specimens in cultivation, and ranks with that in Mr. Russell's collection at Falkirk or Mr. Dodgeson's at Blackburn. Another pretty species, *C. Mastersii*, although less effective, is still well worth a place in the most select collection; here it is bearing five or six gracefully-curved spikes of milk-white flowers with pale pea-green bracts. Here, too, are two of the finest specimens of *Dendrobium Kingianum* in Europe, both in robust health and growing freely. This is a pretty rosy-purple-flowered Australian species, which, apart from its rarity, well deserves culture as a free-flowering and beautiful plant. Another rare *Dendrobe* (*D. Lowii*) is represented here by two specimens, both fresh and healthy. This belongs to the nigro-hirsute or black-haired section, and produces golden-yellow flowers with a peculiarly hairy lip. A plant of *Thunia alba* had just flowered, but Mr. Denning informed us that it is more beautiful than some of the paler varieties of *T. Bensoniæ*. It had made a vigorous growth, the stems being fully a yard in length, and proportionate in thickness. We also noticed strong healthy plants of *Dendrobium nodatum* and the delicate green-flowered *Dendrochilum filiforme*, the spikes of

which resemble, to some extent, delicate filigree jewelry. Passing into one of the cooler houses, we came upon *Odontoglossum* and *Masdevallias*, literally revelling in the fresh airy atmosphere and genial humidity so essential to the growth of these plants. Here, for the first time, we had the pleasure of seeing the pure white variety of *Roez's* *Odontoglossum*, a decided acquisition, and one which will be thought by many to be more beautiful than the purple-blotched variety. The flower is perfect in shape, having snow-white sepals, petals, and lip, with the exception of a stain of clear lemon-yellow at the base of the latter; this plant will form a worthy companion to the white *Lycaste*. The *Masdevallias* were in fine condition, about half-a-dozen species being in flower at the time of our visit. *M. Veitchii* was, of course, one of the best, possessing, as it does, so rich a variety of bright colours. *M. ignea* is another brilliant little gem, the flowers of which glow like red-hot iron, especially when contrasted, as in this case, with the cool snowy flowers of *M. towarensis*, the inimitable texture of which can be likened to nothing so much as that of a snow-flake. *M. peristeria* has curious sombre-looking greenish flowers, mottled with dull brown within, like some of the *Stapelias*, but the lip is very beautiful when examined closely, being hinged almost as delicately as that of a *Bolbophyllum*, and set with dense purple papillæ. *M. Estradiæ* is another little gem, with rich dark purple flowers. In habit it somewhat resembles *M. coccinea*, the leaves being only an inch or two in length, and of perfect outline—so much so that the plant is always interesting, even when out of flower, which must, indeed, be seldom, as the plant now under notice was furnished with a plentiful supply of new buds, and some of its former flowers were only just on the verge of decay. We hope yet to see great pans of *Masdevallias* at our floral exhibitions with from twenty to fifty flowers on each. Imagine *M. Veitchii* with fifty flowers all open at once. Why even the scarlet *Anthurium* would look of a dull brick-red compared with it. We have already seen the chaste little *M. towarensis* with thirty-six flowers on a plant scarcely a foot in diameter, and we feel assured that this will be much exceeded in time. Side by side with the *Masdevallias* were two or three plants of *Odontoglossum vexillarium* now making vigorous growth; Mr. Denning told us that one of these plants had borne a magnificent arched spike of richly-coloured flowers this season. Some plants of *Cypripedium* *insigne* were blooming freely, but, in point of beauty, these were far surpassed by a vigorous plant of the true *C. insigne* *Maulei*, which, as here seen, is one of the best of all the *Lady's-slippers*. It is distinct from the common variety in habit, the flowers being larger in size, and the broad upper standard or sepal is of a pure white half its length, and blotched with clear light purple, not greenish-white, blotched with dull brown as in the common form. This is a plant which should be in every collection of cool-house Orchids; but, like many other good things, it is but seldom met with in true character. To buy it in bloom is the surest way to obtain it true to name, and even if 50 per cent. more is paid in consequence, one has the consolation of knowing that future disappointment is impossible. Another really good and showy plant well worth general cultivation by all amateur Orchid growers is *Epidendrum Catillus* (*E. Imperator* of Linden), one of the tall-growing kinds, which bears large terminal clusters of reddish-crimson flowers, such as might almost be mistaken for *Ixora* blooms were it not for the magical soft lilac and white of the arrow-headed or jagged lip. This plant possesses the good property of blooming for ten or twelve months in succession, and then, when one cluster of flowers is past its best, a new one makes its appearance a little lower down the spike, just as often occurs in *Phalenopsis*. *Epidendrum*s are not general favourites, but this may be considered as the gem of the group or section to which it belongs. Some plants of *E. vitellinum majus* in the same house are making vigorous growth and promise well for future display.

The north side of a span-roofed house we found devoted to the cooler growing Orchids and *Odontoglossum*s, being divided from the southern half by a glass partition. In order to afford the necessary shade, some thick tiffany or other coarse fabric is strained over the glass, and is found to answer admirably. Here we found dozens of *Odontoglossum Alexandræ* and *O. Pescatorei*, most of them throwing up flower-spikes in all directions. One variety had the most perfectly formed spike we have ever seen, its pearly flowers being arranged in the most graceful natural wreath imaginable, and here and there suffused with delicate rosy-lilac, the base of the fringed lip being suffused with soft golden-yellow. A fine plant of *O. cristatum* bore six fine spikes which drooped around the pot on all sides, and a very fine variety of *O. Hallii* was furnished with four good spikes. The lion of the collection, however, was a splendid specimen of the last named plant, on which we counted seventeen flower-spikes, many of them branched. This was not at its best, but when in full flower will be a sight worth seeing. A plant of *O. coronarium* bore a stout erect spike of brilliantly-tinted flowers, which, in both form

and colouring, are quite distinct from any other *Odontoglossum* which we have yet seen. The colour of the rounded segments is a bright reddish-brown, shiny as if varnished, the lip being golden-yellow, blotched with brown, and barred with deep rich purple. This plant is not unfrequently met with in collections, but, as a rule, it flowers very rarely; still, Mr. Denning has succeeded in blooming it every season since 1870, when it flowered, for the first time, we believe, in this country, under his management at Grimston. It is sometimes known as *O. candelabrum*, and more rarely as *O. brevifolium*. A vigorous plant of *O. sceptrum* bore a strong spike of soft greenish-yellow flowers, something between those of *O. Hallii* and *O. cristatum* in shape, but distinct as regards colour. The segments are blotched with a soft hazel-brown, the effect of which is peculiarly interesting. In this house *Oncidium macranthum* grows very freely, and is just now throwing up vigorous growths. A plant of *O. superbiens* var. *Enai* is also growing vigorously, and now bears a great branched spike of tiger-striped flowers. Another rare Orchid, *Namodes medusa*, and one with which many growers have failed, is growing here freely on a carpet of fresh living *Sphagnum*. Mr. Denning has two plants of it both doing well, and on the largest we counted nine strong "leads." This plant, when shown a year or two ago in flower, attracted much attention on account of the curious bright port wine-like colouring of its singularly fringed lip. This species is often placed on a dry block, and in such positions it invariably fails; but if the block is covered with a fresh growth of Moss, and a fair supply of tepid moisture is given at the root in conjunction with a moderately cool temperature, the difficulty experienced in growing it vanishes.

One of the Orchid-houses here faces the south, and is managed differently from the others, inasmuch as a drier atmosphere is maintained, and no artificial shading is used. We have seen this mode of treatment also carried out in Mr. Backhouse's nursery at York, and in both cases with successful results. Some small plants of *Dendrobium nobile*, which have been propagated and grown on in little baskets suspended from the roof, afforded convincing proofs that this mode of management suited them, the growth being short but remarkably plump, and of that ripe golden-yellow colour which in this species nearly always foreshadows a profusion of bloom. The plump and vigorous growth of *Lælia autumnalis*, under the same treatment, was also equally remarkable. Some established plants of *Odontoglossum grande* have become markedly altered in habit by this treatment, the leaves being considerably shorter and of greater substance than others produced in a shaded and more humid atmosphere. In both cases the size of bulb was the same, still from the stout and rigid character of their foliage one may reasonably infer that they were better developed and likely to be more floriferous than they otherwise would have been. A well-established plant of *Lælia autumnalis* was throwing up seventeen fine flower-spikes, and was one of the best examples of this species we have yet seen, while, close beside it, a plant of *Oncidium tigrinum* bore a fine three-branched spike, bearing in all thirty flowers. *Cattleya citrina*, which often baffles all attempts to grow it successfully, was here literally luxuriating in the most perfect health, its pendent growth being in some cases more vigorous than that on newly-imported plants. Another delicate little plant (*Epidendrum erubescens*) was throwing up a flower-spike, and growing freely up a long slender block; and a strong plant of *Odontoglossum cariniferum* was bearing two or three stout flower-spikes. Some plants of *Lælia majalis* have made remarkably fine growth, suspended near the light; and it will interest Orchid growers to know that this shy-flowering species blooms regularly here every season, and possibly some of our readers may remember the fine variety of it which was shown by Lord Londesborough at the Royal Horticultural Society's exhibition on May 13th, 1874, and which bore three fine flowers.

Entering another house we found such a display of *Pleiones*, or Indian Crocuses as they are called, as we have seldom seen before. These are grown here in quantity, and are found almost invaluable for cut, or, to speak more correctly, pulled flowers; for, if the stem of the flower is taken between the thumb and finger and pulled gently, it comes out of its sheath with a much longer and more convenient stalk than it is possible to obtain if the knife or scissors are employed. Notwithstanding our love for novelty, we have not yet "bedded out" either Orchids or aquatics, although, in the case of the former, this might well be done in a moderately warm conservatory or winter garden by plunging pots of *Pleiones*, *Cattleyas*, *Odontoglossums*, *Masdevallias*, and other free-flowering subjects of compact growth on a fresh green carpet of *Selaginella*. For particular occasions this scheme might be adopted for a few days without injury to the plants. We have already seen this scheme well worked out by using Roman and common Hyacinths, Crocuses, Narcissus, and Snowdrops mixed with a few late-blooming scarlet *Pelargoniums* for brilliancy of colour, and the effect was, indeed, very beautiful. This

circumstance immediately suggested itself to our mind on seeing, perhaps, twenty or more pots of *Pleione lagenaria* and *P. maculata* neatly arranged in a continuous line, and supported by a row of fresh green *Isolepis (gracilis) pygmaea* backed by *Cattleyas* and other miscellaneous plants of larger growth. The effect of this simple arrangement was very striking. In the same house we were shown a fresh and healthy specimen of the blue-lipped *Zygopetalum maxillare*, which had produced seven spikes of flowers, and each spike was bearing from five to seven fine blooms. This is one of the best varieties of this plant which we have seen, and as a specimen it is not far behind the splendid example of it which exists in Mr. E. Wrigley's collection at Bury, in Lancashire, which at one time bore seventeen spikes, furnished collectively with 147 flowers. The pretty little *Odontoglossum Rossii* grows well here, one plant of it being nearly a foot across. This is a fine purple-blotched variety, with a broad and beautifully filled lip. This is the purple-columned variety, and now bears eight or nine spikes, many of them being three flowered. The pretty little *Cattleya Pinelli* was also flowering freely in the same house; it bears rosy-lilac flowers, with a blackish-purple or velvety-crimson lip. It is of very neat and compact growth, and well worth growing as an attractive autumn and winter blooming species. A fine variety of *Zygopetalum Mackayi* bore three spikes of richly coloured flowers, the markings on the broad white lip being of the most vivid bluish-purple. Here also was a fresh and healthy specimen of the distinct-looking *Arpophyllum giganteum*, which has made a luxuriant growth, and shows well for future bloom. This fine old Orchid is sadly too much neglected; still, when well grown, it is an effective and graceful plant, either for exhibition or for purposes of general decoration. A plant of *Oncidium erosum* was furnished with twelve fine spikes of pale golden flowers, and is now highly effective; while a plant of the purple-flowered *Dendrobium Parishii* has made the finest growth we have ever seen, the newly-formed bulb being fully 18 inches in length, and nearly an inch in diameter. The old *D. cretaceum* has made growth nearly equally fine, and a plant of *D. atro-sanguineum* is in the best possible health. The latter species is one of the most difficult plants in the genus to cultivate. A pan of *Cœlogyne cristata* here, nearly a yard across, was in fine condition, reminding one of Mr. Yates' mammoth specimens, which grow in a little shady stove at Sale. It is one of the best of winter-blooming Orchids, and the plant in question promises, when in bloom, to be a perfect picture. A plant of the rare *Epidendrum amabile* bore five or six spikes of showy lilac-purple flowers, and had been in bloom for the past three months. The *Cœrulean Vanda* was furnished with a spike or two of pale blue lilac-shot flowers, and others have been cut for indoor decorative purposes. *Saccolabiums* generally do well here; some magnificent specimens of *S. giganteum* are in wonderful health and vigour, and are showing well for flower, while a plant of the beautiful old *Oncidium Lanceanum* is in splendid condition, the leaves being of a fresh green colour, without the slightest trace of the baneful spot which so commonly attacks this plant. Three fine little specimens of the rare *Dendrobium senile* deserve notice, as it only exists in one or two British collections, and is very interesting on account of its pseudo bulbs being covered with long white silky hairs. Another rare species, *D. bigibbum*, grows well here, and flowers freely. This is the finest of all the Australian *Dendrobies*; it is, unfortunately, rare, more valuable, indeed, than gold—weight for weight. Some plants of the sparkling little *Sophranitis grandiflora* were blooming freely, grown on blocks suspended near the light, and *Cattleya Perrini*, a distinct and well-known plant, was very showy. Some fine masses of *Lælia anceps* were throwing up their slender two-edged scapes, indicating a gorgeous display of colour in a few weeks' time. In conclusion we may state that with but few exceptions all the plants just named were in bloom when we saw them about ten days ago, while many specimens, equally remarkable in size and vigour, are not noticed, simply because to have mentioned but half those worthy of note would have lengthened our report beyond reasonable bounds.

Marechal Niel Rose.—Those who have space to spare in their greenhouses or conservatories should plant a good strong *Marechal Niel* this autumn; it is a good evergreen climber, as well as one of the most useful plants that could be put on a conservatory wall, and one which will also be useful for furnishing cut blooms.—H. G.

Fruit of *Tacsonia Van Volxemii* Eatable.—I have met with several people lately who were under the impression that the fruit of this beautiful flowering greenhouse climber was not edible. That is, however, a mistake. Its fruits, which somewhat resemble those of *Passiflora edulis* in form and flavour, are even more palatable than the fruit of that Passion-flower, and may be used at dessert in the same way. As a fruit-bearing plant, it is even more to be recommended than the *Passiflora*, inasmuch as it ripens fruit in a cool house, and produces it for a long time in succession. Old plants of it fruit more freely than young ones. An old plant of it which covered a large space on the roof of the show house—No. 4—at Kew a few years ago, produced fruit annually in abundance.—J. Muir.

THE FLOWER GARDEN.

INSECTS AND COLOUR IN FLOWERS.

MR. BOULGER correctly attributes to me the opinion that the development of beauty is an "object in Nature." He thinks it a fallacious opinion: so I suppose does Mr. Darwin. I hold that opinion advisedly, however, and believe that the rejection of it is a constant source of error in Mr. Darwin's books, for which otherwise I have the profoundest respect and admiration. I do not dispute that colour may be attractive to insects, or that the reproduction of plants may be assisted by it; but I reject the doctrine that the colour would have no *raison d'être* if insects were exterminated, and I believe that Mr. Darwin's theories upon this point are not sufficient to explain his own facts, or such other facts as are revealed by Mr. Comber's curious researches into the dispersion of coloured flowers. I do not see any reason to doubt that if all flowering plants had been propagated by buds and stolons only, as some plants practically are, the world at this epoch would still have known the beauty of flowers, although probably, with less variety of form and colour. It is part of the natural development of the wave of life, as sure to be produced, when the total conditions are ripe for it, as leaves in the spring, or as *Lycopods* in the coal age and *Conifers* in the oolite. The law of natural selection expresses truly enough the interaction of forces in the great heaving life-sea, but the forces are not increased or diminished by it, only modified in their lines of motion, the course made clear for one and obstructed for another; here a union of similars, and there a neutralisation of opposites; while each works out a destiny of its own as an individual wave, and shares the common destiny of some larger wave of which it is a constituent part. What insects do in relation to the colour of flowers is to modify the conditions, so that the force, which has already begun to show its tendency to develop colour, may get freer play, and in each generation approach nearer to its climax. The many instances in which colour is developed independently of insects seem to me to show quite conclusively that the colour-producing force which exists in the plant will break through all obstructions whenever the opportunity is presented. Sometimes increased richness of soil will furnish the necessary condition; sometimes a higher temperature; sometimes cross-fertilisation; sometimes the care and selection of man. This law holds good throughout the organic world, and accounts for colour wherever it is found. The Darwinian doctrine of mere utilitarianism is driven to the strangest devices in its attempts to do the same thing. Mr. Boulger speaks of the development of corolla at the expense of stamens as a "degradation of organs," and regards it in the light of a disease. Many botanists would agree with him, no doubt. But where is the proof of this? Is a plant produced for the mere purpose of re-production? Is that even its highest purpose? Whatever beauty may be, the reproductive process is assuredly a means, and not an end. There is some ground for the hypothesis that the flower of a plant represents its nervous centre, that it is the analogue, perhaps even the homologue, of the brain and countenance of the higher animals. In vegetables the reproductive organs are associated with this nervous centre. But they are not so placed in animals, and if they had been otherwise arranged in vegetables the blossom might still have been the crowning beauty of the plant. I do not admit that the metamorphosis of stamens into corolla is a degradation at all. I am not sure whether the production of perfectly double and perfectly barren flowers ought not to be regarded as the final goal of every species of plant—the point at which reproduction becomes no longer necessary, because the life-wave of that species has reached its climax and needs no further to be carried forward from generation to generation. Finally, the point at issue amounts to this: Is colour in flowers a mere expedient for getting them cross-fertilised? or is it a natural and necessary phase in the development of plant-life, which serves also the secondary purpose of securing the advantage of cross-fertilisation; as the brain of man, which is primarily the great organ of thought and sentiment, serves also the secondary purpose of selecting wholesome food? I hold to the latter view, which includes and accounts for all that the other does, and much besides.

F. T. MORR, in *Nature*.

THE VIOLET AND THE NAPOLEONS.

THE 15th November is the Empress Eugénie's fête day, and Violets became perceptibly dearer in Paris on that day during the Second Empire, when there was a perfect Violet ovation; bunches of Violets, not in hundreds, nor in thousands, but in tens of thousands, being thrown through the iron railings of the court-yard of the Tuileries. The palace servants piled them up into enormous pyramids, which reached as high as the first-floor windows; the various doors were decked with them, and the great central balcony,

from which the Empress greeted the people, seemed absolutely made of Violets. The Violet came to be chosen as the badge of the Napoleonic dynasty during the early days of the present century, when the great general, who, as he himself boasted, carried the fate of France and Europe at his sword's point, had already been elected First Consul for life, and was rapidly advancing towards the Imperial throne. His wife, Josephine, was living at Malmaison; while he himself inhabited the Elysée, and rode almost every day to Malmaison, accompanied only by a single servant, or perhaps by the faithful Rustan. One February morning, on his way to Josephine, he rode faster than usual, being late. The cause of his delay had been a bouquet of Violets, expected from Versailles, and which had not arrived. In those days Violets in winter were rarities, and it was impossible to get them from ordinary gardens. Bonaparte, however, had a promise to perform; it was Josephine's fête day, and, when a few days before, he had asked what present he should bring her, she had replied, "only a bouquet of Violets." Was it possible he might not be able to fulfil this simple request—he who a year later was to present her with an imperial crown! Two messengers had already been despatched to Versailles; Bonaparte was worse off than Louis XIV., he was obliged to wait. At the last moment he received from an unknown hand a magnificent bouquet of Violets, ten times more beautiful than the Versailles flowers would have been. The consul was surprised and touched—could he guess the giver? Galloping to Malmaison, he found that the friends of the family, who of course were many, had already brought splendid presents; but, embracing his wife, he only presented the promised bouquet. Napoleon's great love for Violets dated from this incident. That particular bouquet was taken care of like a pet child by his special desire. When at length it faded, Josephine, although she could not comprehend her husband's sudden passion for Violets, took care to procure fresh ones; and after she became Empress, she had Violets always about her. Afterwards, when a fatal policy had thrust her from the Throne, and she had retired desolate and unhappy to Malmaison, gardening was her favourite occupation, and the Violet her favourite flower. And when, after a few years, she died of a broken heart, Violets were planted on her grave; and they bloom around the mausoleum which has been erected over her last resting place. Even at Saint Helena, Napoleon planted Violets; and when his coffin first touched French soil at Cherbourg, it was covered in a few minutes with bouquets and wreaths of Violets. Under the Restoration, the white Lily once more raised its head, and under the prosaic government of July no one troubled himself about flowers; but with the Second Empire the Violet regained its place of honour. In November, 1848, there was great excitement throughout Paris, for the president of the new republic was about to be elected. The sad days of June were still fresh in the memories of all; and the future fate of France appeared more than ever uncertain. Everyone anxiously wondered whose name would head the list—whether the new ruler would be Cavaignac with government by the sword, Louis Blanc, or Ledru Rollin, with socialism or communism, or, finally, Louis Napoleon with a second Empire. The Prince was walking uneasily up and down a room in the Hôtel du Rhin, in the Place Vendôme. On the chimney piece and window sills stood costly vases filled with Violets—an attention of the landlady's, which in after days was not forgotten by the Emperor. A few faithful followers surrounded him—Persigny, Morny, Dr. Conneau, and others. "These flowers are a sign of good fortune," said the Prince to Persigny, as he pointed to the Violets, and already a tumultuous crowd was on its way from the Hôtel de Ville, where the adding up of the three million votes had just been completed; nine-tenths being for Louis Napoleon.

Flower Gardening at Stukeley Hall.—When on a visit, a few days ago, to Stukeley Hall, the residence of P. Tillard, Esq., I noticed a very pretty bed planted as follows: The ground-work was composed of Veronica Imperial Blue intermixed with dwarf plants of Abutilon Thompsoni, fine in colour. Although the beauty of other beds in the gardens had departed, this was in great perfection, and produced a very pleasing effect. Both the Veronica and Abutilon will stand several degrees of frost without sustaining any injury; in fact, two large old plants of the Abutilon stood out here unprotected last winter, although we had in February 17° of frost. Of course the young growths were killed; but they broke strongly from the old wood in spring. I should state, however, that they were in rather a sheltered position. At Stukeley, like many other places that have come under my notice, foliage, or carpet bedding, is in the ascendant, and Mr. Hopkins, the intelligent gardener, had used for that purpose, in his different designs, most of the plants usually met with in the London parks. Stukeley has also acquired, at the local shows, a reputation for its Roses, which are grown in considerable numbers.

Mr. Hopkins is in favour of dwarfs on their own roots, and, to carry out this idea, he is gradually removing all standards, as Roses on their own roots are unquestionably more lasting. The soil, a heavy loam on clay, when properly manured and cultivated, is well fitted for Rose culture. Mr. Hopkins uses largely burnt clay or earth for opening and improving the staple of this heavy land—an example that might be advantageously followed elsewhere, both for flowers and vegetables.—E. HOBDAV.

An "Alpine bed."—I venture to ask if you would tell me in the next number of THE GARDEN the best arrangement for an Alpine bed, 12 feet in diameter, as a centre to our flower garden. The bed is at present in two tiers, edged with Fir piles. These would be removed, and the bed lowered, but, as I imagine it would be too large to plant like fig. 27, in "Alpine Flowers," which I have, I should be greatly obliged for any instructions as to whether it would be well to keep it in two divisions, and how you would advise the bed to be arranged to look best. The surrounding beds are filled with bedding-out and foliage plants.—E. C. H. [The instructions in "Alpine Flowers" almost meet the case. Use no formal edging of any kind, and avoid all divisions. The essential point is to have a mass of good free soil; from this allow a few good stones to crop up, taking care that the base of each is buried, and the best side exposed. Use no rampant-growing plants, for which gardens are best fitted. The dwarfest and choicest plants are generally best kept towards the upper parts of the rocky bed. Such a bed should be wholly kept apart from ordinary bedding arrangements.]

Grafting Roses on Wild Stocks.—M. Carbon, writing in the November number of the *Revue Horticole*, makes the following interesting and instructive remarks on the grafting of Roses on wild stocks. He relates that, having grafted some fine new kinds of somewhat delicate, indeed weakly, growth, on very robust stocks, with the purpose of supplying them with the vigour which was wanting in their natural constitution, he was entirely disappointed in the result, nearly all the grafts so treated having perished. It would appear that they were over fed by the profuse sap of the robust stock, and positively perished by a kind of surfeit, and the experimenter, M. Carbon, infers, therefore, that Roses of delicate growth should be grafted on stocks of analogous constitution to their own. M. Carbon announces another interesting result of his careful observations on Rose grafting. He tells us that, having subsequently grafted some other kinds on wild stocks of similar robustness to their own, that they succeeded well, the grafts throwing out long and healthy shoots. To give them still more strength, however, he rubbed off all the coming shoots of the wild stock; but, to his surprise, found that the previously fine growth of the graft soon began to dwindle instead of showing increased vigour after this operation; and, in another experiment, therefore, instead of destroying all the shoots of the wild stock, he only suppressed those of the grafted branch, allowing wild shoots to remain and flourish on the stock above the grafted branch, and this experiment proved entirely successful. M. Carbon considers that, in this instance, the shoots of the wild stock above the graft served as sap-tractors, drawing up a good supply of sap past the grafted branch, which naturally partook of the supply thus brought, as it were, to its door.—H. N. H.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Crocus odoratus.—This is a pretty slender blue-flowered species well worth a place on any warm snug border. It is just now in bloom at Kew, bearing pale sky-blue flowers with deep orange anthers.

Cleaning Statuary, Vases, &c.—It is recommended, in cleaning Moss-covered statuary in gardens, &c., first to kill the vegetation by the application of petroleum or benzine, which will not injure the stone, and to remove it when dried by brushing, and, finally, rubbing with a rag.

Geranium Robertianum album.—I am very fond of this pretty little white-flowered plant, which, to my way of thinking, is far brighter and more effective than the common pink-flowered form. It is just now flowering on the rock-work at Kew, and well deserves a place in a similar situation in other gardens.—B.

Fortune's Saxifrage a Good Autumn-blooming Plant.—To anyone in search of good autumn flowers, I would recommend Saxifraga Fortunei. It is now very pretty, both in foliage and flower. It is perfectly hardy; it will be cut down by the first frost, but will come up again in the spring. I think it would be very effective as an edging plant.—HERBY N. ELLACOMBE, *Bilton Vicarage, near Bristol*.

A Wild Garden on Stiff Soil.—What should I do with about half an acre of stiff land which I have destined, from its sequestered and sheltered position, for a wild garden as described in Mr. Robinson's book? How can I best prepare the soil for such a purpose? Will it be desirable to diversify the surface with some mounds, or are these on such a soil likely to get too dry?—A. C. R. [There are so many vigorous hardy flowers in cultivation that enough could be selected to form a charming wild garden on almost any soil. In stiff soils the numerous Asters and Golden Rods, many Pea-flowered plants, the Evening Primroses, Spiræas, Buttercups, Globe-flowers, Statice, Iberis, Aubrietias, &c., and many other plants do well. If, however, you prefer to make the ground better in other ways you can, of course, enjoy a greater variety. Diversify, by all means avoiding the stiff, ugly, and formal banks and mounds commonly seen where artificial diversification of ground is attempted by incompetent persons.]

THE GARDEN IN THE HOUSE.

A TABLE VASE OF AUTUMN FLOWERS.

It has often been laid to my charge that I am the exponent of a style of table-decoration which is too costly for the million. I believe that it has been my good fortune to have had opportunities, which but few others have enjoyed, of arranging flowers and foliage which, from their rarity, are not often procurable even for love, much less for money; and, if I have been guilty of occasionally endeavouring to convey to others some of the pleasure which the best of these arrangements have afforded myself, the offence will, I trust, be generally considered to be neither unnatural nor unpardonable. Lest, however, it should be supposed that nothing short of Orchids and Gleichenias will satisfy me, I send you a description of a large vase which occupied the centre of a round dinner-table, 7 feet in diameter, and which was furnished at a cost of 10s. from purchases made in Covent Garden Market. The bill was as follows:—Ferns, 3s. 6d.; German Asters, 1s. 6d.; Gladiolus, 1s. 6d.; Pink Geranium, 1s.; Fuchsia, 1s.; Cyperus, 1s.; Snowberries, 6d. The following was the plan on which they were arranged:—At the bottom, a fringe of dark green fronds of *Polystichum aculeatum*; in the middle, a fringe of smaller and paler green fronds of the same Fern, mixed alternately with good fronds of Maiden-hair; at the top, a light fringe of *Pteris serrulata*. The flowers in the bottom dish consisted of purple and of deep crimson Asters, arranged in an irregular circle, with here and there a white one. Within this circle reclined three spikes of scarlet Gladiolus, placed obliquely and spirally, under the shade of three fine umbrellas of *Cyperus alternifolius*. Two or three light fronds of *Polystichum* and Maiden-hair finished this part of the vase. In the middle dish were used Asters of smaller size, chiefly pink and white, with here and there a smaller purple one for contrast. Outside of this ring were placed, at irregular intervals, some small branches of Snowberries (*Symphoricarpos racemosus*), which drooped over the fringe. Inside the circle of Asters were a few scanty trusses of pink Geranium Christine, partially concealed under some pieces of green *Cyperus*. The trumpet-shaped vase at the top was surmounted with a spike of white Fuchsia with a red corolla, while some small lateral branches of the same hung over the edge. Besides these, there were a few trusses of Christine, some pieces of Snowberries, which had their branches supported by fine stiff wire to keep them upright, and a few fronds of Maiden-hair. The whole was lightened and finished by the introduction of half-a-dozen sprays of climbing Fern. Amongst autumnal decorations, I have seldom seen one which pleased me more, and I am much

indebted to Mr. Burbidge for the assistance which his carefully executed drawing affords me in explaining the arrangement of the flowers, and in conveying the effect produced. Although a vase of these dimensions may be too large for dining tables of ordinary width, it would look well either on a sideboard or in the centre of a drawing room. W. T. P.

HAND BOUQUETS.

NOTHING requires more taste or skill in its arrangement than a well made and effective hand bouquet. As a rule, unexperienced persons employ as many flowers and Ferns to make one hand bouquet as a professional bouquet maker would make three out of with ease. The reason of this is, in home-made bouquets (if I may be allowed to use the expression), the flowers are hardly ever mounted on wires, but are left on their own stems. Doubtless, they remain longer fresh in that way, but who requires a bouquet to keep fresh more than one evening? Each flower, or truss of blooms, as the case may be, which has a long stem, should have it cut off with the exception of, at most, about 2 inches; these stems should then be bound to a stub wire, the wire being bound up nearly to the flower, so as to support the stem the whole way, otherwise the flower might be liable to break off above the stub. Before finishing off binding the stub and stem together—indeed, just after one or two twists of the binding wire have been given—a little damp moss should be placed round the stem of the flower, and then bound round with the binding wire. This keeps the flowers fresh the whole evening, and should be applied to every flower and Fern that is used in a bouquet; when making one, therefore, after the flowers have been wired, the next thing is to bind them to the stubs, as has just been described. All being prepared and ready to hand, the next thing is the making of the bouquet. Some seasons it is the fashion to have bouquets very large, while in others they are of much smaller dimensions; but the proper size may be determined by taking a peep into some first-class florist's window. It is almost impossible to learn to make hand bouquets by means of printed directions; by far the best plan is to see one made. The way in which I myself first learned to make hand and button-hole bouquets was by watching how they were made in the shops in Covent Garden Market. My first attempts were very poor indeed, but I persevered and many a prize have I taken for them since. All bouquets are finished off with a fringe of Ferns round the edge, the most suitable for this purpose being *Adiantum cuneatum*, a few fronds of which should stand up through the flowers in the bouquet. This tends to give it a light effect, a point to which as much attention as possible should be paid. Bouquets are always finished off by a paper frill, the pierced work round the edge of which should be as handsome as possible when lace is not employed; papers are sold with lace attached, but these I do not approve of, as, when lace is used, it should be real and handsome, and bear looking into; that sold attached to the papers is only imitation and much better dispensed with altogether. The only imitation lace which looks well for this purpose is Blonde, but in any case the best plan is to tack on the lace to the



A Vase of autumn flowers.

paper yourself, when you can select what kind you please. A bow of ribbon and two long ends are often tied round the stems of bouquets, outside the paper or wicker shield, which keeps damp from coming through and spoiling one's gloves. If for a bride's bouquet, the bow and ends should be of pure white ribbon, satin or corded according to taste. I myself prefer the latter, as being more elegant. For a ball or bridesmaid's bouquet, if of white and scarlet or blue and white, or any other colour selected with white, half of the bow and one end should be of white, and the other half should match the colour in the bouquet. I have seen this look particularly elegant where the bouquet was made of mauve and white flowers. As a rule, I think lace round the edge more suited for wedding bouquets than those to be used on other occasions. For sending a bouquet a short distance, basket cases are sold, which prevent their being crushed. "Bouquets for the hand" (says a contemporary) "should be made of the choicest flowers, gracefully arranged; heavy solid flowers or massive arrangements should be as much as possible avoided. Such bouquets are necessarily brought under the closest inspection of the eye, and should be composed of flowers of delicate structure of great variety, and exquisite fragrance. The present style of immense size, composed of solid flowers, scarcely if at all relieved by foliage, is only suggestive of some enormous variegated or pied Fungus, hung with silk fringe, or put up in lace paper. When carried at evening entertainments, they frequently appear to be a burden to their possessors. For successful effect in floral decorations much depends upon the judicious arrangement of colour; violent contrasts are also to be avoided, as is also the sameness produced by having too much of one colour. In producing harmonious contrasts of colours, it should be remembered that there are only three primary colours—red, blue, and yellow. From these arise what are called the binary or secondary colours, namely, orange composed of yellow and red; purple, composed of blue and red; and green, composed of yellow and blue. These form contrasting colours to the primary three with which they are in harmonious opposition, as the orange with blue, purple with yellow, and green with red. From the combination of these secondary colours arise three tertiary colours—olive, from purple and green; citron, from green and orange; and russet, from orange and purple. These tertiary colours harmonise with the primaries, as they stand in the relation of neutral tints to them, but are in harmonious opposition to the secondaries, from which they are combined. Red, blue, and yellow harmonise with each other, and they may be placed in juxtaposition, but purple should not be near red or blue, as it is composed of these two colours; for the same reason, orange should not be placed next to yellow or red, the rule being that no primary colour should be brought into contact with a secondary colour of which itself is a component part; nor any secondary colour brought into contact with a tertiary colour of which it is a component part. Another rule is, that the secondary and tertiary colours, and the neutral hues arising from combinations of the tertiaries, such as brown, maroon, puce, slate, lavender, &c., should be used in the greatest quantities, and the primary colours used in smaller quantity for heightening the effect. If you lack the proper shades for producing the necessary harmonies, and find that two colours do not harmonise well, separate them by a white flower. Again, always place the brightest colours in the centre of your design, and gradually decrease the intensity of the tints as you approach the exterior; and avoid spottiness or patchiness by using as much as possible one prevailing colour." I always place in the centre of my bouquets a Rose, Camellia, or some such flower. One of the prettiest bouquets I think I ever made was arranged as follows:—In the centre was a white Camellia, then white Azaleas, Stephanotis, Gardenias, Woodruff, and a rich mauve-shaded Cineraria, Lily of the Valley being spiked over the whole, together with blooms of *Dendrobium nobile* and fronds of *Adiantum cuneatum*, a fringe of the latter being formed round the edge. The whole was finished off by a handsome paper, and a bow and long ends of mauve and white corded ribbon.

Sprays for the Hair.—Elegant sprays of natural flowers may be mounted for this purpose with little trouble, and are far prettier than the artificial ones mostly used. A little damp Moss or cotton-wool should be bound round their stems to keep them fresh, or it is a good plan to insert the ends in a small glass tube, such as is sold for coat flowers (the sharp hook having first been removed). This can be easily concealed amongst the braids of the hair, and in this manner flowers will keep fresh the whole evening. A. HASSARD.

Growing the Chrysanthemum for Table Decoration.—I venture to send you my practice as regards growing dwarf, sturdy, well-flowered Chrysanthemums, suited for both table and conservatory decoration. I do not advocate the 6, 8, and 10 feet scale of

growth, excepting for cut flowers. I take cuttings from old plants about the middle of July, and insert them in boxes or hand-lights exposed to the open air, and when these are rooted I pot them off into 60-sized pots, using a compost of one-third leaf mould and sandy loam, well-decayed manure, and plunge in ashes; I syringe freely and water with liquid manure. When the shoots have grown 2 or 3 inches in length I pinch them back to whatever shape the plant may be required. As soon as the plants have become well rooted in the 60-sized pots they should be shifted into 54's or 48's well crocked, using the same compost as before, and again plunge. At this stage of growth, to retard their growing tall, they must only be watered to keep them from flagging. Protect from frost under a hand-glass, raised to give a circulation of air, and discontinue the application of manure-water when the plants are in flower. I can thus have plants 1 foot in height (including the pot), flowering profusely, and furnished with foliage to the pots. This may be considered unnecessary trouble; but, with such results, I feel amply repaid. The kinds I find most useful are Cassy, Duke of Edinburgh, General Harding, Mrs. Morgan, Jardin des Plantes, and Cedo Nulli.—A. J. O., Felcourt.

GERMINATION OF SEED.

THE *Flore* says that two chemists of the Academy of Brussels, Messrs. Dehéan and Ed. Landrin, have made some interesting discoveries relative to the germination of seed. It is well known that the action of the air and the presence of water are necessary conditions; but hitherto the mode of action of these two agents has not been understood. M.M. Dehéan and Landrin have been enabled to throw some light on these mysterious phenomena. It is now ascertained that the effect of water is to soften the covering of the seed so as to render it permeable by gas. When they have imbibed sufficient moisture, the tissues of the seed acquire the property of condensing gases. This condensation cannot take place without producing heat; the oxygen, therefore, which has penetrated the tissues is sufficiently heated to cause oxydation and the consequent awakening of vegetable life. According to the experiments of M.M. Dehéan and Landrin, the condensation of the gases in the seed is the first commencement of germination. If this condition is not produced, whether from want of water or because the air cannot reach the seed, there can be no formation of the immediate principles necessary for the evolution of the germ. These experiments, although highly scientific, are very interesting from a practical point of view, as they enable the cultivator to determine the influence which the solidity of the soil, the dryness or the excess of moisture, the depth of earth in which the seed is placed, may have on the success of the sowing. Experience has already taught us much on these matters, but scientific methods, corroborating, as they do, the observations of practical men, can alone point out the sure means to be employed to bring about the desired results. W. N.

THE JOVIAL VEGETARIANS.

AIR—"Fill a Bumper Fair."

Fill the saucepan fair,	Sweet is the Seakale,
Friends are asked to dinner,	Stew it slightly quicker;
Shred the Beans with care,	Draw us Adam's ale.
Slice the Carrots thinner.	'Tis the best of liquor.
Mash the Turnips well,	Potatoes please to steam,
Cream improves their flavour;	For every one a plateful;
How nice yon Pea-soup's smell!	And prithoe do not dream
How dainty is its savour!	The guests will not be grateful.
Chorus. Fill the saucepan fair, &c.	Chorus. Fill the saucepan fair, &c.
Celery you have bought,	Now, for the bouquet
Clearly you have reason,	Cut a Cauliflower,
'Grass I would have sought,	Sweet as new-mown hay
But 'tis not now in season.	Sprinkled with a shower.
Cabbage?—by all means,	Then with cheerful smile
Brussels Sprouts we'll give too:	Go and mix the salad:
Men who live on greens	I at ease the while
A green old age may live to!	May warble you a ballad.
Chorus. Fill the saucepan fair, &c.	Chorus. Fill the saucepan fair, &c.

—Punch.

Floating Gardens.—Artificial islands are, it seems, common in China, as well as in Mexico. "The Chinese fishermen" (says Barrow's "China") "having no house on shore, nor stationary abode, but moving about in their vessels on the extensive lakes and rivers, have no inducement to cultivate patches of ground which the pursuit of their profession might require them to leave for the benefit of another; they, therefore, plant their Onions on rafts of Bamboo, well interwoven with Reeds and long Grass, and covered with earth, and these floating gardens are towed after their boats."

THE FRUIT GARDEN.

TESTING GRAPES.

AMONGST the many comforts and enjoyments that glass has given us, we may well rejoice in that one which enables us, in this dull month of November, to sit warm and secure from wintry blasts under the shade of our own Vines and Fig trees. Summoned by a neighbour to taste and pronounce an opinion on the merits of the products of his glass-covered Vineyard and orchard, the advantages alluded to as being conferred by well-erected glass structures were very fully evidenced; we tasted the Grapes that hung about us, and noted their qualities and peculiarities, and we were so fortunate as to have the opportunity of contrasting the merits of Mr. Pearson's new Grapes with the old-established and approved kinds. The notes thus made apply to the Grapes we had before us; other soils, situations, and culture may modify the sorts commented on, but as we tasted and thought, so we decided. Our opinions may, therefore, be of some use and interest to intending Vine growers.

Muscat Champion.—This is not so much known or appreciated as a Grape possessing so many good qualities deserves to be. I presume that the reason it is so seldom seen in collections is the fact of its peculiar colour, a grizzled red, but I do not know that a Grape need necessarily be white or black. A badly-coloured Hamburgh is held to be a discredit to a cultivator; and that may be, but there is a richness in the tint of colour in this Grape that separates it from an ill-coloured Hamburgh, and makes it really a desirable addition to an artistically disposed dish of Grapes. The Muscat Champion produces a long, rather thin than massive, bunch, not much shouldered; the stalk is thick and fleshy; berries, large as a Mill Hill Hamburgh. In quality the Grape is juicy, melting, slightly flavoured with the Muscat aroma, but still sweet and refreshing; the berry is thin-skinned, the flesh not adherent to the pips. The Vine is a vigorous grower.

Royal Ascot.—A free-growing and free-bearing black Grape; berries, oval, black, large; pips leave the flesh; bunch, medium-sized; berries, irregularly clustered, one-shouldered. An agreeable vivacious Grape, without any pronounced aroma, and, therefore, suitable to most palates; very firm and rather strong skin, and short foot-stalk.

Chaptal.—A cross between Chasselas de Fontainbleau and Muscat, partaking of the first-named parent in the greatest degree, producing freely its thin Muscadine-like wood; bunch, medium-sized; berries, of an amber colour when well ripened, less viscous in flesh than Chasselas. A Grape not without recommendations.

Madresfield Court.—Free, as regards habit of growth, and prolific; bunches, moderately large; berries, oval, black, medium-sized, rich refined Muscat flavour. An excellent Grape in many respects, but requires special treatment and a house exclusively devoted to it, in order that its best qualities may be developed. It will not hang so long as Muscat of Alexandria.

Mrs. Pince.—A free-growing and distinct Grape, producing, under high culture, large bunches; berries, oval, black, strong skin, firm flesh, slightly flavoured with the aroma of the Muscat. Not adapted for general amateur cultivation. It has the merit of keeping well.

Lady Downes.—A Grape that is found to thrive in some localities, and under certain modes of treatment, and to fail altogether in other places. Under congenial treatment it produces large bunches, medium sized black berries, the skin of which is thick; it has no marked flavour. It hangs well. It is a variety very liable to be affected by mildew.

Muscat of Alexandria.—Still unapproachable in regard to those great recommendations of a Grape—constitution, free habit of bearing, quality, and size of bunch; the shades of difference between the varieties of Muscat, such as Charlesworth Tokay, Bowood, and others are too slight to be readily distinguished. When well ripened, the rich golden colour of the fruit, the handsomely formed bunch, and the luscious aromatic sweetness of the berry, constitute it the first in the list of English hot-house Grapes; no Grape hangs better. It may be preserved on the Vines until April.

Black Alicante.—The variety grown in the Newark Vineries differs in the form of berry from some others bearing the name. It was obtained from Mr. Merrideth. The berries of this variety are nearly round, other kinds are oval. Mr. Ingram, of Belton, raised many seedlings from the old Alicante, and these were distributed, and this may account for the differences found in the so-called Alicante. This kind produces a large and massive bunch, the berries moderately large, intensely black, and covered with a fine bloom; the skin is thick, flesh melting, and not perfumed. It is one of the best and hardest late keeping Grapes.

Raisin de Calabre.—This has the merit of being free in

growth, and producing large bunches. When well ripened it has a golden tinge. It has no marked aroma, and is, perhaps, less meritorious than the White Nice.

Ferdinand de Lesseps.—A Grape obtained by Mr. Pearson, from the American race of Vines; by a cross with Muscadine, a blending of the two flavours is found combined with a sweetness and aroma peculiarly its own; it is the most distinct and peculiar Grape we possess, and is probably destined to furnish a new character, if not a new race, of Grapes; its intense, almost cloying sweetness, and marked aroma make it objectionable to refined palates; it is rather small in berry and bunch under ordinary culture.

Mrs. Pearson.—Bunches of this variety, with Golden Queen and Mr. Bass, were courteously sent by Mr. Pearson, on the solicitation of Mr. Newton, and were, with the older kinds, duly tasted and discussed. The bunch produced by Green Queen is symmetrical, and will, probably, be large under special culture. The berries are greenish, slightly oval, of medium size; skin, tough but not thick; flesh adherent to pip; in quality the Grape has an agreeable freshness, with a slight "suspicion" of one of the characteristic peculiarities of Lesseps—an aromatic sweetness. There is a distinct character and quality about this Grape that will secure it a place in our collections.

Golden Queen.—The bunch sent to us was of medium size and handsomely proportioned, the berries hanging on thick close foot-stalks. The Grape in colour is a rich amber, like the Muscatel of shops; it is excessively sweet, with a distinct aroma that is not Muscat, but reminds one of de Lesseps without its cloying sweetness; the skin is strong without being thick, the pips not adherent; the Grape, altogether, has a very promising combination of good qualities that ensures it a great future, and its raiser a position amongst the raisers of good fruit. The Vine is said to be hardy, and excessively prolific.

Mr. Bass.—A direct seedling from the Alicante, with all the external peculiarities of size and colour, perhaps more oblong in berry than the Alicante, tough strong skin, and sweeter than its parent, juicy, not too fleshy, and is of free growth, and, with the keeping properties of the Grape from which it is derived; likely to be an acquisition.

W. INGRAM.

Belvoir.

RIPENING PEARS.

PERHAPS no kind of fruit is more influenced by the season than Pears, both as regards flavour and time of ripening. The soil of the kitchen garden here is of a very strong adhesive loam, with a red clay sub-soil; the very dry and warm summer has, therefore, just suited the Pear crops, which have been the most abundant this year that I have ever grown. Perhaps a list of the best early, mid-season, and late Pears, and their times of ripening from the open borders, may be of interest to the readers of THE GARDEN. The first variety in ripening was the Doyenné d'Été in the middle of July, and when grown on the Quince-stock, as a bush or pyramid, it is very ornamental in colour and good in flavour; but on the walls it was worthless with me, and not deserving of a place there. The Citron des Carmes is another good juicy early Pear ripening early in August, and is worthy of a wall in cold districts. The Beurré Giffard is one of the very highest flavoured of early Pears when grown as a bush on the Quince-stock; it ripened with me in the middle of August. That old favourite sort, the Jargonelle, double grafted on the Pear-stock and grown as a pyramid, ripened with me an excellent crop in the end of August, being as juicy and good flavoured as any from the walls. Madame Treyve, an excellent, high coloured, and good flavoured early Pear, ripened here in the middle of September, and bears well as a bush on the Quince-stock. Summer Beurré d'Arenberg, a small-sized but delicious Pear, ripened with me in the middle of September. Louise Bonne of Jersey is one of the best old favourite Pears grown, and has borne with me enormous crops, both on pyramids and on a wire-trellised arcade. Perhaps this variety, when grown as a bush on the Quince-stock, is higher coloured and better flavoured than when grown in any other way. It first ripened here this year in the end of September. The Comte de Lamy is a medium-sized but most delicious autumn Pear, and ripened here in the first week in October. The Beurré Bosc, another rich perfumed Pear, has never ripened here before; but on a wire trellis this year's crop has been abundant, and the fruit large in size and excellently flavoured, and they ripened in the middle of October. The Gansel's Bergamot is well known to be one of the best flavoured of all Pears, and is, in general, only a shy bearer, but here, on a wire-trellised arcade, three large trees on the Pear-stock have borne very excellent crops; the fruit has likewise been very large for the sort, and of a far richer aroma than any gathered from the walls. The Beurré Superfin, in the same arcade, has likewise borne very fine crops, and of excellent flavour, the season of ripening being in the end of October. Beurré

de Caen, synonymous with the old Brown Beurré, has ripened well on this trellis for the first time, and proves to be an excellent late October Pear. The Beurré Hardy is another excellent melting Pear, and bears on the Quince stock as a bush or pyramid; it ripened here in the beginning of November. The Fondante d'Automne is a small delicious melting Pear, ripening in the first week in November.

Welbeck.

WILLIAM TILLERY.

THE BLACK ALICANTE GRAPE.

I AM so favourably impressed with the merits of this Grape that I consider it well worthy special notice. A few years ago Black Lady Downes was everybody's Grape who required or desired a late variety; but so few are able to combat successfully with the scalding which annually deprives the bunches of the best of their berries, that many, if not rooting it out altogether, are certainly not increasing their stock of it; many intending planters are, therefore, on the outlook for a late Grape that will with certainty repay them for any care and expense that may be bestowed upon it. But, were matters not as bad as has just been stated, I am of opinion that Black Alicante would still be preferable to Lady Downes under the most ordinary treatment; provided there is a good border, the Alicante will succeed better than any other Grape with which I am acquainted. When the bunches are newly formed, and up to the time when they are coming into bloom, they are extremely small and unpromising, but, after the berries are fairly set, they swell out in a wonderful manner, and invariably form handsome bunches, which weigh from 2 lbs. to 6 lbs. each. The berries set more thickly than those of any variety I know. I never yet saw an imperfectly set bunch of it, and this in itself is a recommendation which should not be overlooked. From the time the berries are set until they are thoroughly finished they exhibit no flaw or blemish; on the contrary, they colour well, and become covered with bloom. This variety will bear with impunity a heavier crop than any other kind I have seen tried in that way. In short, a weight, under which others would shank and shrivel, is unflinchingly borne by the Black Alicante; and, whoever heard or saw this variety not colouring through excessive cropping, or any other cause? while its flavour, which is the main point in the case of all Grapes, is second to none in mid-winter, and, though much thinner in the skin than Lady Downes, it keeps as long in perfection as that variety. Altogether, it is a most excellent Grape.

J. MUIR.

PEARS WORTH GROWING.

I FIND but little to dissent from in the descriptive list (see p. 455) of Pears furnished by my old friend, M. Ferdinand Jamin. Having the great advantage of a knowledge of both English climate and culture, and a perfect acquaintance with that of France, his estimate of Pears is particularly valuable and correct as applicable to this country, and his information about the selection of Pear-stocks is calculated to be useful to those engaged in the cultivation of Pears. What he says in recommendation of Beurré Superfin and Beurré Hardy is emphatically true; they are Pears of great excellence. But, alas! they ripen so quickly after gathering, and take a bruise so easily, that our rough-handed dealers would never be able to present them in a tempting form. A Pear sent to me under the name of Beurré d'Anjou, by Mr. Rivers, is called Ne Plus Meuris in M. Jamin's list. The kind grown in this country as Ne Plus Meuris differs essentially from Beurre d'Anjou, which is large, well-formed, and altogether one of the best and handsomest Pears I possess. Our Ne Plus Meuris is a hardy, prolific, late-keeping kind, seldom shapely, and not always good. I endorse everything that is said in commendation of Doyenné du Comice. Passe Colmar, grown on a south and east wall with me, does not deserve the encomiums bestowed upon it by M. Jamin. It is generally small, and never first-rate in quality. Orpheline d'Enghein is a very useful Pear, seldom failing to produce a crop; it is a juicy and refreshing kind, and keeps after ripening. I have fruited Olivier des Serres two years successively, and I like it exceedingly; it keeps well, and its flesh is particularly soft and mellow. It is a very distinct Pear, being strongly russeted and irregular in shape. There is one Pear which M. Jamin only mentions in his list of Pears for walls which deserves notice. It is one I originally received from him under the name of Doyenné d'Alençon; it is a Pear I value highly, and recommend as a late-keeping and valuable variety. M. Jamin has probably not proved those excellent Pears raised by Mr. Hayshe, Victoria and Prince Consort, and he omits a Pear that has carried off the prize for high quality at the metropolitan shows, Knight's Monarch. I do not find that excellent late Pear, Beurré Rance, named; it is one that should be included in every collection; for late use it is the most valuable Pear I grow.

Beloeil.

WILLIAM INGRAM.

Autumnal-tinted Vine Leaves.—I know of no leaves which become more richly tinted in autumn than those of certain varieties of Grape Vine, a houseful of different kinds of which presents at that season as interesting and diversified an appearance as a mixed plantation. The leaves of Barbarossa attain the finest of hues, which consist of golden-yellow, vivid reddish-scarlet, and deep green. In some the centre is yellow, belted with crimson and edged with green; in others these colours are reversed. These markings are not confined to decaying leaves, but also exist on fresh foliage, whose veins and tissues are full of sap. In some places leaves of this kind are sought after for garnishing; this variety of Vine is, therefore, alike useful in autumn for its delicious fruit and its strikingly pretty foliage. Old planted-out rods of the Black Alicante keep their leaves quite green up to the very last, when they become yellow and decay; but the leaves of young one-year old canes of this variety are exceedingly beautiful. Long before they are ripe they assume a bright red colour, charmingly suffused with yellow; these, like the leaves of the Barbarossa, are very useful and elegant for purposes of decoration. The foliage of Lady Downes becomes spotted, but not in a pretty way. Gros Colman has very peculiar leaves, the edges of which, about midsummer, become withered up as if scorched by fire or badly attacked with red spider, and by autumn they present a very withered appearance. This is the character of the variety, and when looking worst it is, nevertheless, in perfect health. West's St. Peter's, on the contrary, is a variety worth growing as a climber, on account of the beauty of its foliage alone, which early in autumn becomes bright scarlet, beautifully veined with green. Barbarossa, Alicante, and West's St. Peter's have all foliage of the most attractive description.—J. MUIR, *Clovenfords*.

Origin of remarkable Belgian Pears.—The Abbé Hardenpont of Mons, was the first of the race of Belgian fruit growers. In the last quarter of the last century, he obtained from seed the Beurré de Hardenpont, the Passe-Colmar, the Beurré Rance, and the Delices d'Hardenpont, some of which still hold places of the first rank in advanced Pomology. M. Van Mons, of Louvain, quickly followed, having between 1787 and 1854, raised 500 kinds of new Pears, several of which are of the highest class. M. Beront, between 1845 and 1854, produced within that decade no less than sixty new kinds; in 1828, he produced le Delice d'Flays, which is even finer than les Delice d'Hardenpont. The Society Van Mons, only produced eleven new Pears during the sixteen years of its existence, showing that individual perseverance is very generally more successful than combined efforts. M. Gathoge, of Liege, produced in 1852, Beurré Edouard Morren. In 1828, M. Magnery obtained from seed the Poire Renoz, a good and fertile summer kind; and M. Henrard, as early as 1840, introduced his Bon Chrétien and Vernois, said to have been received from France. M. Legepont, of the Commune of Charneux, produced in 1800, the celebrated Fondante d'Charneux. The Bon Chrétien Lamarche, was found in a convent garden of the province of Leige, where its origin was unknown.—From "Les Fruits Belges," by M. Gilbert.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Strawberries for a Kentish Garden: BEGINNER. The following will suit you:—Vicomtesse Hécart de Thury, Keens' Seedling, Rivers' Eliza, Sir J. Taiton, President, Mr. Radclyffe, Amateur, British Queen, Admiral Dundas, and Elton Pine.—J. B.

Cultivating Fruit Trees.—So great is the loss resulting from stunted and diseased growth, occasioned by neglected cultivation, that an intelligent cultivator gave it as his opinion that if nine-tenths of our orchards should be cut down, and the labour and cultivation which they receive be expended on the remaining tenth, more and better fruit would be raised.

Mulching Fruit Trees.—A correspondent of the *Horticulturist* planted 150 trees in an orchard in very good but rather dry soil. All were planted with equal care, but a third of them were mulched, or the surface of the ground, when planted, covered with 6 inches of litter. Those thus treated all lived; but fifteen of those not mulched died in the hot dry weather. It is not stated that the soil was kept clean and mellow around them, which will often save the life of trees.

Pears and Apples for Cold Regions.—*Pears*: Seckel, Flemish Beauty, Giffard, Virgaltien, Sheldon, Lawrence, Winter Nellis, on Pear stocks. Louie Bonne of Jersey, Tyson, Angoulême, Winkfield, Osband's Summer, Glou Moreau, on Quince. *Apples*: Red Astrachan, Sops of Wine, Early Joe, Gravenstein, Oldenburgh, Porter, St. Lawrence, Fameuse, Ribston Pippin, Baldwin, Jonathan, Peck's Pleasant, Pomme Grise. The above, according to a trustworthy American fruit grower, are the best for very cold regions, and as such deserve noting by British growers.

Grafting the Peach.—This, in the Northern States of America, requires great skill for its successful performance, but at the south, where growth is so much more rapid, and other influences more favourable, it is comparatively easy. Mr. Robert Harwell, of Mobile, long known for his skill in fruit culture at that place, gave the following results of his practice:—I propagate all my Peaches by grafting, beginning in November or December, and if the stocks and grafts are good and the grafting well done, I do not lose over five in a hundred. I have my grafting done at the house, and plant the grafts like Cabbage plants. I formerly budded, but found it very troublesome, and have entirely abandoned it.

THE LIBRARY.

ISMAILIA.*

THIS is an interesting book, containing a graphic account of an expedition organised by Ismail Khedive, of Egypt, for the suppression of the slave trade in Central Africa. It is well illustrated with plans and excellent woodcuts, one of which we reproduce. It represents a scene which occurred in the journey up the White Nile, a river remarkable for the luxuriance of its aquatic vegetation, the margin of the water on both sides being elegantly fringed with long Grasses, while here and there occur clumps and masses of the Papyrus, readily distinguished by their umbrella-like plumes. In the open spaces a species of Lotus grows and flowers very luxuriantly. Many native trees and plants are incidentally mentioned throughout the work. "I had," says the author, "European vegetables of all kinds, and, having cleared and grubbed up a portion of the forest, we

ORANGE GROWING IN THE AZORES.

THE islands of the Azores owe their wonderful fertility to the nature of their soil, which gives evident signs of an eruptive origin. That of St. Michael, which is the home of the celebrated Oranges, has evidently been in two islands, the interval between having been filled up by cinders and lava. Numbers of volcanic cones are found in this space, and streams of lava have poured the detritus over the rocky ground, which, when modified by the humidity of the sea, constitutes a vegetable earth of incomparable fruitfulness. This favoured spot is divided and sub-divided into enclosures, surrounded by high walls, and designated in the country by the name of "quintas." Here the Orange is cultivated, and the culture is described as follows in "Cassell's Magazine." Hundreds of thousands are yearly gathered, embarked, and transported to the London market. There is probably no district in the world where the culture produces so much in so small a space. The tree does not belong to the primitive flora of St. Michael. The precise time when it was introduced is unknown, but it was certainly soon after the discovery of the islands. Botanists believe it to belong to the eastern countries



Nile Vegetation.

quickly established gardens. The English quarter was particularly neat. The various plots were separated by fences, and the ground was under cultivation for about two acres, extending to the margin of the river. I did not build a house for myself, as we preferred our comfortable barge, which was moored alongside the garden, from the entrance of which a walk led to a couple of large shady Mimosas, that formed my public divan where all visitors were received. In a short time we had above ground Sweet Melons, Water Melons, Pumpkins, Cabbages, Tomatoes, Cauliflowers, Beetroot, Parsley, Lettuce, Celery, &c.; but all the Peas and Beans, and a very choice selection of Maize, that I had received from England, were destroyed during the voyage. Against my express orders the box had been hermetically sealed, and the vitality of the larger seeds was entirely gone." We can heartily recommend this work to all interested in the new world opened up to us by Livingstone, Stanley, Kirk, Baker, and other well-known explorers.

* "Ismailia." By Sir S. Baker, M.A., F.R.S. Two vols. London, Macmillan & Co.

of Asia, and admit that it was only brought to Europe in the fifteenth century. A hundred years after that it was largely cultivated at St. Michael's, at which time the flower, neglected in the present day, furnished to the distillers a large quantity of exquisite essence. The exportation of Oranges was not much developed until the middle of the last century, whilst the war and Continental blockade, which ruined other commerce, seemed rather to favour it. The close alliance which was then established between England and Portugal created commercial relations, and a market for an unlimited supply of the products of St. Michael. The culture of Oranges has thus very considerably increased during the last thirty years, and the manner of cultivation has much improved. In former days the plants were left unsheltered. They were planted at great distances from one another, thus forming magnificent trees, covering a large surface of ground, one of which would bear from 15,000 to 20,000 Oranges. A heavy stone was laid on the top of the trees, to force the branches in a lateral direction, and to keep a low level, so that the wind might not destroy them. This system has, however, been entirely abandoned, as the damage was so great during the fearful storms of winter blowing over the Atlantic. A tempestuous night sufficed to cover the ground with Oranges, and thus destroy a fine

harvest. On some occasions the trees were themselves uprooted, or torn to pieces; besides which, the delicate buds coming out in spring generally suffered much from the damp saline spray brought from the sea by the wind. The idea was then adopted of enclosing the trees in small plots, surrounded by trees; but it was soon discovered that the shadow prevented the growth and ripening of the fruit; and it was not until 1845 that the present system was finally adopted. The quintas are now squares of from 40 to 50 yards across, whilst stone walls, from 3 to 6 yards high, surround them. The strongest blasts are broken against these masses of thick basaltic blocks, the unhewn surfaces of which are mortared together. Within this rampart a hedge of the Faya tree is closely planted, and thus forms a green curtain several yards in height. After many attempts to discover the kind of tree which suited best for a shelter, this native of the island has been unanimously chosen. For many years the cultivators tried the *Pittosporum undulatum*, an elegant evergreen tree imported from Australia. The beauty of its leaves and the rapidity of its growth seduced the eye; but it exhausted the land, and interfered with the growth of the trees it was used to protect. The Laurel of the Canary Islands, and also that of India, possessed good foliage and quick growth, but their roots extended too far into the ground. The Faya, on the contrary, improves the land, as its dead leaves form an excellent manure. Not only does it leave the trees which are planted near it all the nourishing juices, but it is found that many other varieties, such as the Oak and Elm, thrive better near it than when planted alone. Near the sea, however, the *Pittosporum* is used, as it resists the dust and salt from the sea better than the Faya. During the time necessary for these trees to grow, the land is sown with a kind of Broom, which is destroyed after three or four years. Some cultivators think that the quality of the Orange has suffered from this protection, both air and sun being intercepted; but time is required to solve so difficult a problem, as well as a continuous series of observations. The ground of the plantations must be ploughed and tilled for four or five years. After that twice a year it undergoes a superficial ploughing. The Lupin is often sown and dug into the land with a hoe, to improve it. This plant plays a large part in the agriculture of the Azores. The volcanic soil spontaneously furnishes flint, salts of potash, and phosphates. If it contained azote, any additional manure would be unnecessary. This is exactly what the Lupin is so rich in at its maturity; thus it is pulled up and dug in to complete the natural richness. Then the ground will yield, without rest, two harvests in the year; and Melons, Cucumbers, and Pumpkins, which with us require special beds, prosper in the common soil. Every year the dead wood is cut out, and the shoots thinned; but, as a rule, the Orange tree is never pruned. In dry seasons it is well watered if the supply be near, and sufficient in quantity. The trees are planted in a quincunx, leaving between them a distance of 12 or 15 yards; and from the first year the cultivator looks for some fruit as a reward for his labours, though the tree does not enter into full bearing for ten years. Then, if it be healthy, and planted in good earth, it yields from 1,000 to 1,500 Oranges yearly. An old and vigorous tree, whose branches are long and well thinned, furnishes the immense harvest of 7,000 or 8,000. In those quintas which are too large, the medium does not exceed 600 fruits, whilst the smaller ones bear from 2,000 to 3,000, showing how much good shelter and care will do towards increasing the crop. There are six principal varieties of sweet Oranges cultivated in the Azores. The common one is of middle size, slightly acid, and very sweet-scented. The skin is thin, and adheres well to the fruit, becoming a little thicker towards the end of the season. The *Comprida* is more aromatic than the preceding one, and also more acid. This tree is rarely loaded with fruit. Under the name of the Silver Orange is designated a much smaller one, with very firm flesh, extremely fine skin, and a greenish-yellow colour. The *Selecta*, or choice Orange, is large, of first-rate flavour, little acidity, and of a deep yellow colour. It has scarcely any pips, and does not ripen until April, which gives it a higher value. The *Ombigo* is flatter, and sweet, whilst it furnishes the largest crop of all. Finally comes the *Man-darin*, which differs little from the same variety grown in Malta. The fruit, as a rule, enters into its maturity in October, but the best varieties are not gathered until January, the season terminating in May. The trees are increased in a curious way. The mode of propagation was derived from the Chinese, and has been much in use of late years. A branch, of the diameter of 4 or 5 inches, is chosen, around which is cut a circular incision. Around this, straw matting is wound in the shape of a funnel, and filled with beaten earth, from the 15th of May to the same day in June. Roots soon begin to push, and by the following winter it is provided with sufficient to support it when detached from the parent stem. The young plant thus obtained often bears fruit at the end of two or three years. Formerly grafting was employed, and is indeed still used;

but it is somewhat out of fashion, on account of the relative slowness with which trees "worked" by it come into bearing. It is, however, asserted that the trees to which it has been here applied give the best fruit, and last longer than the others. The gathering in of the fruit is carried on rapidly, and without difficulty. Notwithstanding the constant emigration going on from the islands to North and South America, labour is very cheap. The Oranges are gathered with care, and carried to the packing-shed by large companies of men, women, and children, who bear on their heads or shoulders heavy baskets loaded with the golden fruit, and run bare-footed to the depôt. There each is separately wrapped in a dry Maize leaf, and put in the box. The shape of these boxes has been entirely changed of late years. Formerly they were very large, and held from 700 to 900 of the common variety. Thin flexible planks formed a convex covering, without any solidity, and containing in the lid almost as many Oranges as in the box itself. Those who have seen cases unpacked will remember this curious arrangement, which was explained by saying that the air circulated more fully between these planks than in a box properly constructed, and that this was essential to the preservation of the fruit; but really the custom arose from the wish to escape the tax imposed upon all exports, which only prescribed the dimensions of the lower part of the case. The growers were faithful to the letter, if not to the spirit, of the law, by making the right size, and then surmounting it with an enormous cover. Thus formed, they could not be packed on board ship with any exactness, and the Oranges were but too often crushed. There is now a better understanding with the Custom-house authorities, and the large cases have finally disappeared. They are now rectangular boxes, about a yard in length, and hold only half what the former ones did. They are divided into three compartments by solid partitions, and surrounded by bands of Chestnut wood. The expenses of gathering, carrying to the town, storing, packing, embarking, and paying the dues, including the case and Maize leaves, only amount to the small sum of half-a-crown a case. As for the price of a box of Oranges, that varies very considerably during the season, generally advancing much towards April and May, when it is double or triple. There is also a great difference between one year and another, the state of the season, speculation, and a number of other causes influencing the London market. Sometimes Oranges, when gathered, are sold in the full season at St. Michael's at 20s. the thousand, packing and transport being at the cost of the buyer; other years they have been sold at 7s. 6d. In 1840 the number of cases exported to England was only from 60,000 to 80,000; in 1850 it rose to 175,000 of the old cases; lately about 600,000 of the newly-sized cases are exported. Formerly sailing vessels alone were employed for the transport, but now about half are steamers. The charge for freight to London is between 7s. and 8s. the case, which, it is hoped, will be lowered. Steamboats engaged in this service make eight voyages to England from the 15th of November to the end of April; each carries about 5,000 cases. The application of this kind of navigation has been of immense service. The sea is so stormy during the winter on the shores of the Azores, that a sailing vessel only reached London with a large part of its cargo spoiled. During the last ten years at Ponta Delgada they have been working at a mole, within which the ships can shelter in bad weather; but it is only the steamboats that can get out to sea during a south-west wind, which, unfortunately, is the prevailing one. Sailing vessels, when laden, have been obliged to wait whole weeks, to the great detriment of their cargo, before a more temperate sky permitted of their departure. Before the mole was constructed many sad shipwrecks occurred. Whilst the vessel was loading, the captain watched the signs of a change in the weather with the utmost anxiety, often interrupting the work, and giving the signal for flight, for fear of being dashed on the reefs round the coast. Such events are scarcely thought of now; and the contingencies being so few in the trade, the expenses can be much more surely estimated.

Impurity in Coals a Plant Product.—According to analyses by many chemists (quoted by Professor Dana, in the last edition of his "Geology"), made on Lycopods, Ferns, Equiseta, Mosses, Coniferae, &c., there is in them an average quantity of silica and alumina, such that, if the plants were converted into coal, it would amount to 4 per cent. of the whole, and the whole ash would be 4.75. Many analyses of bituminous coal show but 3 per cent. of ash, and 4.5 is an average. Hence it follows:—(1) That the whole of the impurity in the best coals may have been derived from plants; (2) the amount of ash in plants was less than the average of modern species of the same tribes; (3) the winds and waters for long periods contributed almost no dust or detritus to the marshes. In that era of moist climate and universal forests there was hardly any chance for the winds to gather dust for transportation.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

The Flower Garden and Pleasure Grounds.

ALTHOUGH the season is now past for floral display in the open air, yet as late as the 10th of the present month out-of-door gardens were by no means destitute of flowers. Aubrietias, Forget-me-nots, and Violets of different sorts were tolerably gay; the Christmas Rose was apparently preparing to unfold its blooms, and the Autumn Crocus, late-flowering Asters, Anemone japonica, and other late-flowering plants appeared loth to leave us. A rather severe frost, however, on the night of the 10th, followed by a considerable fall of snow on that of the 11th, gave a somewhat wintery aspect to outdoor beds and borders, checking considerably the progress of early-flowering plants, and closing for the season the career of late-flowering species. The Christmas Rose (*Helleborus niger*), with its improved variety *H. niger maximus*, are well worthy of extensive cultivation, flowering, as they do, at a time when outdoor flowers are scarce, and during a festive season when they are so much required and appreciated. With but little care or attention, these plants will continue to bloom throughout the entire winter should the weather prove moderately mild; and even during severe weather the protection of a few hand-glasses or a frame will generally ensure an abundance of fine, large, and pure white blooms from the beginning of December until the early part of March. Christmas Roses are of easy culture and by no means difficult to increase; early in spring, large roots or patches may be unceremoniously cut into moderately small pieces with a sharp spade, and planted out singly, where they will soon become well established plants, and will flower freely during the following and succeeding winters. When all fallen leaves have been cleared from lawns and similar places, it may, in some cases, be necessary to again pass the mowing machine or the scythe over the Grass; and if the principal gravel walks, or those in immediate connection with the flower garden or the residence, are found to be considerably soiled through decaying leaves or worm-casts, or where the surface may have become covered with Moss, a portion of the surface should be scraped off, and should be replaced with a thin coat of clean gravel, which will tend to give the whole an appearance of cheerfulness during the winter. Finish as soon as possible all transplanting or re-arranging of shrubs and young ornamental trees, and when this has been done shrubberies should be lightly dug over; and, in cases where hardy herbaceous plants of various sorts are grown in the foreground, such plants should be carefully lifted, reduced in size where necessary, re-arranged, and again planted; and all plants which may require it should have fresh soil supplied to them when re-planted. Such additions may be but seldom required in the case of strong-growing herbaceous plants; but they are essential to the successful culture of such plants as the *Aquilegia glandulosa*, *Dianthus* of various sorts, *Oenotheras*, *Pentstemons*, and many of the finer varieties of perennial *Phloxes* and *Violas*. Clean and refreshen the surfaces of beds of choice *Pansies*, *Polyanthus*, and *Pinks*, and give *Auriculas* and other choice Alpine plants in pits and frames abundance of air whenever the weather is mild. Similar treatment should also be given to all well-rooted bedding plants, except such tender species as the *Alternanthera* and the *Coleus*, which must be wintered in a higher temperature. —P. GRIEVE, *Culford, Bury St. Edmunds*.

Roses.

Push on planting while the weather is favourable. Pot a few half-standards for forcing; they prove useful for placing at the back of an early Vinery, or in other situations in which they may yield a few cut blooms. Roses planted on lawns and Grass-plots should be examined this month; remove the turf from a space 4 feet in diameter round the trees, take out the soil, carefully extirpate all suckers, and fill in with some good fresh loam and rotten dung. All Roses planted against trellises and trained over umbrella wires require a supply of fresh soil every other season, a mode of treatment under which they may be induced to live and bloom satisfactorily for many years. I have seen standard Roses thus nursed, over twenty years old, quite an ornament to the lawns on which they were growing. Watch plants starting into growth under glass, and if mildew shows itself dust with sulphur without a moment's delay.—H. G.

Indoor Fruit Department.

Vines.—Such pot Vines as were first introduced into heat will now be showing signs of vitality; the temperature, which up to this time will have averaged 55° at night, may now be raised, in mild weather, 5° during that time, and 10° more in the daytime. Do not damp them too freely overhead, unless the temperature is high enough to absorb the moisture, as, while we have few opportunities of admitting

fresh air, the atmosphere must not be allowed to get loaded with moisture. Place plants enough in heat to meet spring requirements. In some cases a dozen now and then is sufficient; while others, who grow Vines more extensively, need scores. Successive batches should be introduced into heat at intervals of six weeks; less than this often brings in two lots together. The early-started Vinery will now require the assistance of a little fire heat at night, but this may still, in a great measure, be dispensed with, by turning daily part of the fermenting material which rests on the inside border. Repeated turnings allow the heat to escape freely into the atmosphere, and a soft moist warmth is thus produced, which is far more desirable than fire heat. See that the water with which syringing is done is not colder than the temperature of the house in which it is used. In many early forcing houses a tank is placed in such a manner that the hot-water pipes pass through it; but, where no such convenience exists, when done syringing, watering-pots should always be filled and set on the hot-water pipes until again required. Strictly avoid allowing cold air to pass in in draughts through front ventilators; air-giving now, and, indeed, throughout the winter, must be confined to the top of the house. In houses in which Grapes are hanging do not keep the temperature higher at night with fire-heat than just what will keep out frost, and when there is no visible indication that the thermometer will fall to 32°, let the fires go out altogether. When heat is required to dry the house fires should be applied on a fine day, when the ventilators can be opened, in order that moisture may freely escape, and not at night when the house is closed, and when damp rises only to settle upon the berries.

Pines ripening too quickly for consumption, or requiring to be kept for any special purpose, after they are ripe, may be kept in very excellent condition for a month or six weeks, say in a room in which there is a temperature of about 40°. Both plant and fruit should be thus circumstanced unless where any valuable suckers are attached, and are likely to be sacrificed. In this case the fruit may be cut and hung up, crown downwards, in the same room, but, under all circumstances, it is best to cut the fruit, and remove the plant and fruit before they are quite ripe. Watering must now be done with great care; feel each ball with the hand to ascertain if it really needs water. Look over Queens which are resting, and unless they are next to being dust dry do not give them any water. When a very fine day occurs, airing Pineries should receive attention, just the reverse of that recommended for early Vineries. The front ventilators should, in this case be opened. This mode has the very desirable influence of preventing the plants and crowns from becoming overdrawn.—J. MUIR, *Clovenfords*.

Indoor Plant Department.

Keep *Chrysanthemums*, at present gay, well watered, and divested occasionally of all shoots that will make cuttings for next year's plants. *Solanums*, of the *Capsicastrum* section, should also now be very ornamental, especially those of the new hybrid kinds, the berries of which are larger and brighter than those of the common sort. *Cyclamens* coming into bloom should be kept near the glass in the warmer parts of greenhouses; they, however, enjoy a free circulation of air, which should always be maintained. Of Chinese *Primulas*, the farthest advanced should be brought into conservatories, and succeeding portions should be kept in frames. *Sericographis Ghiesbreghtii*, one of our most valuable winter plants, is now coming nicely into bloom, as is also *Libonia floribunda*, likewise an invaluable plant for winter decoration. *Azaleas*, *Camellias*, and *Heaths* should receive plenty of light, and be kept in a moderately moist condition. The earliest *Cinerarias* are now coming into bloom, and should be placed at the warmest corner of the conservatory for a week or so, after which they should be removed to a cooler position. *Cinerarias* and *Calceolarias* in frames should be shifted as they require more pot-room. If climbing plants, trained along rafters, in any way darken the house, they should be thinned or cut in, *Daturas*, *Erythras*, *Clerodendrons*, &c., cut over, should be placed where they can be kept dry throughout the winter. *Tropaeolum tricolorum* and *Jarratii* should receive frequent attention in the way of training, for, if allowed to grow for a week or more without inspection, the young shoots are apt to get broken. Japanese *Lilies* should be re-potted and placed in dry situations in greenhouses. Stoves should range from 60° to 65° at night, and from 70° to 75° during the day. The syringe should be dispensed with, but a humid atmosphere should be maintained by damping the paths and stages. Palms cannot, with impunity, withstand the effects of drought, and the same remark applies to *Musas*, *Screw Pines*, and other evergreen plants. Cycads, although they can bear dryness at the roots longer than most plants, are best kept a little moist. Ferns should be well watered but not syringed. All young ones should be re-potted as soon as they become fit for the operation. Such large Ferns as are re-potted should be placed in warm quarters to induce them to

strike root in the new soil more readily than they otherwise would do. Selaginellas should be divided and re-potted.

Orchids.

Many of these are now finely in flower, more especially some of the species and varieties of *Cypripedium*, *Odontoglossum*, *Oncidium*, *Phalænopsis*, *Calanthes*, *Phajus*, and others. In the East Indian or warmest Orchid-house a night temperature of from 60° to 65° should be maintained, while in the intermediate house it should be 5° lower, and in the *Odontoglossum* or cool house 5° lower still; atmospheric humidity should be maintained in all these houses, but more especially in the warmest one, in which the plants also should be kept a little moist at the roots. The syringe should be entirely dispensed with now in Orchid-houses; such plants as are on blocks should be taken down when necessary and dipped in water; for, if the syringe were used for damping them where they hang, the drip resulting therefrom would be likely to rot the crowns of plants growing underneath. *Anætochili* still growing apace must be kept a little moist, though not so much so as hitherto. *Pleiones* that have finished flowering should be shaken out of their pots and re-potted into a mixture of loam, peat, Moss, and sand, and afterwards placed in a brisk temperature. *Calanthes* that have finished blooming should be stored away under stages or set on side shelves and kept pretty dry. *C. Veitchii* and the red and yellow-eyed varieties of *C. vestita* are now in great beauty. Newly imported Orchids should be spread out on tables, suspended by the roots, or potted amongst half-inch crocks alone, and submitted to atmospheric humidity only until they show renewed signs of life.—B.

Kitchen Garden.

Amongst some kinds of late Potatoes, there is a good deal of disease; Regents, although a very heavy crop, have suffered the most—in some instances to the extent of one-third of the crop; whilst Victorias and Red-skinned Flour-ball have generally escaped. The last I consider a very fine Potato for use after Christmas; rather too large and coarse, perhaps, for a gentleman's table, but in all other respects a thoroughly reliable variety in almost all kinds of soils. Potatoes pitted some time ago should be examined, and their condition ascertained with a view to their being sorted over if necessary. Early Potatoes of the Ashtop section, or any other favourite early kind, that may be required for forcing or early planting, should be placed in shallow trays or boxes, one layer in each box, with the crown upwards, and all growths except one strong shoot should be rubbed off. The boxes may be set in some cool place but where frost cannot enter, and where at least a fair amount of light can be obtained; under a greenhouse stage or in an orchard-house are places in which they keep well; or, failing these, a light loft or stable, where the frost can be kept out, will answer; but they are more likely to be frozen in a loft than on a ground floor. If not already done, take advantage of fine days to finish earthing up late Celery and Cardoons, as frost severe enough to injure young growth may now come at any time unexpectedly. Collect together all kinds of refuse from every available source with the view of having it charred by-and-by when the fruit trees are pruned, and the cuttings are gathered together to form a foundation for the heap. Out of such waste products large quantities of valuable manure may be obtained free from seeds of weeds or eggs of insects. Stir the soil amongst the earliest Cabbages, choosing a fine day for such work, and then earth them up—an operation which will tend to strengthen and protect them, and consequently hasten their growth. A bed of Shallots and also one of Garlic may now be made on a dry well-prepared piece of land, to which a dressing of burnt earth, soot, or lime has been applied; plant in rows 1 foot apart, and 6 inches between the bulbs. Unless, however, this has been proved in each particular locality to be the best season for planting them, a portion of the stock should be set aside for planting in February. It is also a good plan to procure a change of bulbs sometimes, or raise some from seeds, as almost everything has a tendency to deteriorate if grown continually upon the same kind of soil. Turn over heaps of manure, and prepare it for wheeling on the land when frost sets in. Mushroom-beds in the open air will now require careful management in order to maintain a regular temperature; if the coverings get saturated with wet they should be removed, and dry litter placed next the bed, and every means should be taken, by increasing its bulk, to keep the heat in the beds. Successional sowings of Mustard and Cress should be made in heat; French Beans in pots should be kept near the glass in a warm light house; as they advance in growth a small stick should be placed to each plant and the plant be neatly tied to it; and all plants in bearing should have frequent applications of liquid manure, and every pod picked off when fit for use to prevent the premature exhaustion of the plants.—E. HORDAY.

EASTWELL PARK, THE SEAT OF THE DUKE OF EDINBURGH.

THE *Standard* gives some account of this fine old park. It lies in that part of Kent where, according to Fuller, "health and wealth are reconciled to live together." There is a district of "health without wealth," those high Downs which form what is called the backbone of the county, and there is another of "wealth without health," the deep, rich, agne-haunted pasturages of the marshes along the Medway and the Swale, and about Romney in the south. But the Eastwell country, north of the Weald, and south of the barren Downs, almost justifies Drayton's encomium:

O, famous Kent,
What county hath this isle that can compare with thee?
That hath within thyself as much as thou canst wish,
* * * * *

Nor anything doth want that anywhere is good.

It is richly wooded, yet not too much so; and the great Oaks which makes the glory of the Weald flourish here on the green sand just as vigorously as in the Weald clay. There are, indeed, few nobler Oaks in the county and few more picturesque woodland glades than are to be found in the Park of Eastwell, which Defoe, in his "Journey through England," declares to be the finest he had ever seen. From a hill in the north-west corner, toward which the avenues called the "Star Walks" converge, there is a view across the county on either side; on the north, Sheerness and the Nore are seen beyond the heights of Challock Wood and the Forest of the Blean; on the south, the Channel is visible beyond Romney Marsh. The massy leafage of the Oak at this time, varied with all the russets and "sober gold" of late autumn, gives character to the greater part of the wide prospect, and marks how little the main features of the country have changed since Gregory the Great, writing to St. Augustine, desired that British timber might be sent to him at Rome for building the churches of St. Peter and St. Paul. Let us hope that none of the ancient Oaks of Eastwell have been felled for building any portion of the new work at the hall. "It has not been unusually observed," says the gossiping Aubrey, "that to cut Oak-wood is unfortunate," and it would seem that the Oaks of Eastwell are under the protection of more than usually powerful wood-nymphs. "I cannot omit," continues Aubrey, "taking notice of the great misfortunes in the family of the Earl of Winchelsea, who, at Eastwell, in Kent, felled down a most curious grove of Oaks, near his own noble seat, and gave the first blow with his own hands. Shortly after his countess died in her bed suddenly; and his eldest son, the Lord Maidstone, was killed at sea by a cannon-bullet." The connection of these misfortunes with the Oak-felling is somewhat arbitrary; but Aubrey supports his story by others not less edifying, and tells how "there was at Norwood one Oak that had Mistletoe, a timber tree, which was felled about 1657. Some persons cut this Mistletoe for apothecaries in London, and sold them a quantity for ten shillings each time, and left only one branch remaining for more to sprout out. One fell lame shortly after; soon after each of the others lost an eye; and he that felled the tree, though warned of these misfortunes of the other men, would notwithstanding adventure to do it, and shortly after broke his leg." If these warnings are not sufficient to strike the Oak-cutter with terror, let him remember the fate of Archbishop Islip, of Canterbury, who, it is recorded, "wasted more of the timber in the Weald of Kent" than any of his predecessors; and who, after falling from his horse in riding from Sevenoaks, was seized with paralysis at Mayfield, in the very hall which he had built, and under the oaken roof which had once been growing timber in the green depths of the Weald. But, whatever "curious groves" may have disappeared from Eastwell, there is no lack of great Oak trees in the park, many of which are sufficiently gnarled and ancient to have looked down on the "last of the Plantagenets" as he wandered beneath their shadow. This is a country of "wells"—the water-springs bursting forth abundantly from the green sand on the edge of the chalk. Eastwell lies just below the line of the ancient "Pilgrim's Way," the road which, keeping along the sides of the Downs, was followed by those coming from the southern coast who sought the shrine of St. Thomas at Canterbury. Stunted Yews and Oak trees mark its course, and the pilgrims who journeyed along it altered to pay their vows to such lesser shrines as they encountered on their way. Such was Charing, a little west of Eastwell, where, in the church, was a remarkable relic—the block on which John the Baptist was beheaded—brought into England by Richard I. Charing was a manor of the archbishops, and in their palace there, of which there are considerable remains, Henry VIII. was entertained on his way to the famous Field of the Cloth of Gold.

LOCUST TREES have been found to grow in forty years, 60 feet high, and 6 feet in circumference at a height of 3 feet from the ground. The wood toughens as the tree grows older.

THE ARBORETUM.

EFFECT OF LIGHTNING ON TREES.

At page 450 allusion is made to the peculiar effect which lightning produced on a tree in this locality last September. The tree in question is one of the large Elms (50 or 60 feet high), in the Avenue de Paris, and is situated about 100 yards from my dwelling. On its trunk there exists three distinct perpendicular and perfectly straight grooves, completely denuded of bark; the grooves are, some 5, some 7 to 8 centimetres in width; the rest of the bark is perfectly intact; two of the grooves are 25 centimetres apart; the other is on the opposite side at 80 centimetres from the former. One groove continues high up among the branches to near the summit; the others begin at the lowermost part of the branches, about 12 feet from the ground. The grooves end abruptly, and are cut square off at an inch or so from the surface of the soil. This latter peculiarity I account for in this way. Small basins have been formed at the foot of each tree, with an opening on the other side to receive rain-water, and drain the surface of the foot-path. Three loud thunder claps had preceded this particular thunderbolt, and a smart shower falling there might very probably, therefore, have been an inch or two of water in the basin, which led away the electric fluid as soon as it had touched its surface. None of the branches were either split, stripped of bark, or denuded of foliage, the latter remaining fresh and green throughout. A singular circumstance, and one which I can attribute to nothing else but to this same thunderbolt, is that in my garden, 100 yards off, a Judas tree was found next morning with three-fourths of its foliage entirely dried up, crisp, and brown, as if a flame of fire had passed through it. The bolt fell at 10 p.m., and a strong smell of hot iron filled the house. Although the day had been very hot and sultry, this tree could not have been affected by a sunstroke, for the south side remained perfectly green. A Black Mulberry 10 yards off had a great many leaves here and there burned quite crisp, the others and far greater number remaining perfectly green; nothing else was touched, not even a Paulownia, the branches of which touched and intermingled with the Judas tree. I was myself travelling down to Normandy that day; the wind was blowing a stiff gale all day, hot sultry like a Sirocco, and clouds of dust hurried over the plain, obscuring the sky; we had no rain, neither had any fallen on the coast when we reached it, nor did any fall there until the next day.

Versailles.

F. T. P.

WEeping BEECH.

THE accompanying illustration represents a Weeping Beech tree after it has acquired age, and become well furnished with branches profusely laden with pendulous spray. It is a peculiarity of most weeping trees not to show their full beauty of character until they have attained a considerable age. Who knows anything of a Weeping Beech, who has only seen a young specimen recently planted? Years must elapse before such trees exhibit the appearance represented by the accompanying woodcut; but when that condition has been attained they form, in ornamental grounds, a never-ending source of interest.

THE WILD VANILLA PLANT.

By Vanilla plant we do not refer to the Orchid which furnishes vanilla, but to a hardy North American plant, *Liatris odoratissima*, which, on account of a similarity of odour, has received that name. Most of the species of *Liatris* or Button-snakeroot, have a tuber-like root, and long straight stems, upon which the numerous flower-heads are crowded in a close spike. In *L. odoratissima*, the root-leaves are from 8 to 12 inches long by 2 or 3 broad; those of the stem very small. The stem divides above into a broad branching panicle of purple flowers, which make the plant an attractive one. A correspondent of the *American Agriculturist* has furnished the following account of the plant:—“The Wild Vanilla, or, as it is commonly called, Hound's Tongue, or Deer Tongue, grows abundantly on the edges of what are called ‘bays,’ i.e., low places in the Pine woods, which are partially covered with water and overgrown with Bays (a species of *Magnolia*), or on low swampy Pine woods in east and south Florida and in portions of lower Georgia. The fresh leaf has, when crushed, a greenish disagreeable odour, but when pulled from the plant and dried in the shade for a day or so, it becomes highly fragrant, having a smell resembling vanilla or Tonka Bean, and similar to the sweet-scented vernal Grass, but much stronger. This odour is developed

by some chemical change made in the leaf during the process of drying, whereby a peculiar principle known as Coumarine is formed. Coumarine is found abundantly in the Tonka Bean of commerce, but so abundant is it in the *Liatris*, that it is often found in large quantities on the upper portions of a mass of the semi-dried leaves. It is readily sublimed by a low degree of heat (150°), and the heat generated in these masses or bundles is sufficient to sublimate it on the upper or cooler layer. When found in this way, Coumarine is composed of snow-white needle-shaped



A Weeping Beech. (From the *Bulletin d'Arboriculture*.)

crystals, exceedingly fragrant—a leaf of the *Liatris* often being covered on its under side, and looking as though it had been out all night in cold, frosty weather. The dried leaves furnish an article of commerce, and one that is steadily growing in importance. It is gathered all through east and south Florida, principally on the St. John's River and its tributaries, and sold to the country store-keepers in exchange for goods; by these store-keepers it is sent to the balers and packers, by whom it is sent to New York for home use and exportation. Pilatka, on the St. John's River, is the head-quarters in this trade. One may often see seventy-five or 100 bales, of 200 lbs. each, lying on the wharves, awaiting shipment—one dealer at this place having an order to fill of 150,000 lbs. Adults can gather from 150 to 400 lbs. of the green leaves in a day; active boys and girls nearly as much. The green leaves are taken home and dried in the shade, and lose about 80 or 85 per cent.; they are when dried, sold at country stores for from 3 to 6 cents. per lb., yielding quite a good return for the labour. The packer bales and ships, and realises from 8 to 12½ cwt. per lb. The dried leaves are used to give a flavour to segars, snuff, and smoking tobacco. For segars, it is sufficient to place the leaves and segars in alternate layers in a box, and allow the whole to remain together for several days; for snuff, the leaves are dried ground and mixed; it is granulated or shedded up and mixed with smoking tobacco. A small quantity is sufficient to flavour a large mass of tobacco. The odour is given off much more intensely

on a damp day than on a dry one. Although large quantities of these leaves are consumed in our home factories, a much larger quantity is shipped to Germany and France direct, where it is rapidly growing in favour. It is quite probable that it will soon be an article used extensively in perfumery; and as it is known to keep 'the wicked moth away,' it will be in great demand for the purpose in the stead of the strong-smelling camphor and tobacco stems."

PLANTING TREES FOR LANDSCAPE EFFECT.

At a recent meeting of the Scottish Arboricultural Society a paper on this subject was read by Mr. Gorrie. Were the question, he said, merely whether grouping or mixed planting was most productive of landscape effect, the unanimous verdict would be in favour of judicious grouping, and that on all sizes of landed properties—from the 2 or 3 acre villa plot, where groups were necessarily restricted to a few specimens, to the large estate, where groups might form masses of ten, twenty, or hundreds of trees of the same or closely allied kinds of trees. But were grouping only to be deemed admissible on condition of its being equally profitable with mixed or promiscuous planting, he feared that its most strenuous advocates would fail in its defence, more especially were it required that its landscape effects should be maintained unimpaired by other kinds of nurses from the time that the young trees attained sufficient sizes for concealing the natural herbage of the ground surface. He then went on to discuss the merits of grouping of trees for landscape effect under the following heads:

1. *Soil and Situation.*—For choice of these a widely-extended knowledge of arboricultural requirements were needed, and a knowledge of the wind-resisting powers of different kinds of trees, in order that they might be arranged so that the stronger should shelter the weaker.

2. *The Form and Size of the Groups.*—The form of groups should be irregular, and without hard or harsh outlines, as exemplified on a large scale by the few native forests that are still left in this country.

3. *Grouping with the same and Allied Kinds of Trees.*—By far the most commendable mode of group planting was that of associating species with their varieties, and others belonging to the same or allied genera.

4. *Grouping with different Kinds.*—Trees widely different in their affinities, but having a resemblance to one another in size and form of their leaves, might be associated in groups. Mixture of kinds was, however, most commendable when they possessed some other marked characteristic in common, such as colour of foliage, bark, or habit of growth.

5. *Grouping with respect to Size, Colour, and Form of Leafage.*—Ill planting, as in painting, light and dark colours, imparted apparent nearness or distance when the trees were equally removed from the observer. One of the seemingly most difficult problems that the landscape gardener had to solve was that of making straight lines appear crooked, and stiff ones easy, but it could be successfully accomplished by attending to the grouping of variously-coloured trees.

6. *Park Belts, Clump Groups, and Solitary Trees.*—Belts and clump groups were usually planted with unsightly mixtures of over-crowded ordinary kinds of forest trees rising abruptly to full height from the fence enclosures. They should be rounded or sloped down so as to associate harmoniously with the surrounding turf, and this was secured by planting ornamental trees of diminishing stature and shrubbery underwood. Park belts and clumps were admirably adapted for grouping trees, and underwood and detached clumps were specially suited for grouping the different families apart.

7. *Avenues.*—These might either be straight or curved, and were generally associated with a roadway or a grassy ride. They might either be composed of two lines, all of one kind of tree, four lines of two kinds, or tribes of trees, or what might be termed the arboretum avenue, in either two or four rows, all of distinct sorts, grouped or brought together in families. The first, when intended to form a close Gothic arch-like covering, should be planted near to one another in line, and they might be as near to the roadway on each side as half its width. The second, or double avenue, should generally have the rows next to the roadway or drive of one kind, and the other two rows of a different kind, but full space should be allowed for the after development of every tree from the ground upwards, without touching one another, encroaching on the roadway, or concealing from it the trees in the back rows. A very usual and generally commendable practice was to have two corresponding rows deciduous and the other two evergreen. The third, or arboretum avenue, was better in four than in two rows, where sufficient space could be devoted to them, as they allowed of the dwarfier kinds being kept in front and the taller ones behind; and in both the second and third kinds of avenues the

back lines might be associated with openly-grouped underwood and shrubbery when adjoined by plantations or where concealment of or from the outside was intended.

After touching upon fences as an important item in landscape gardening, Mr. Gorrie concluded as follows:—Applying some of the preceding remarks to examples of avenue treatment near at hand, you will, on visiting Sir Walter Scott's Monument and the Edinburgh Meadows, have opportunities of estimating the arboricultural taste and skill of our city rulers. At the former you will see avenue trees selected with the utmost disregard to their adaptation to either soil or situation—the kind being the common or Wych Elm, one of the most capricious of ordinary forest trees—each with a few feet of stem surmounted by a besom-like head of numerous contending branches. At the Old Borough Loch, according to Mr. Maxwell, Mr. Hope, of Rankeillor, commencing about 1722, "raised beautiful hedges and trees, made rich meadows and pleasant walks where gentlemen and ladies resorted." In Campbell's journey through North Britain in 1810, these avenues are described as "a Mall lamentably unlike St. James's, being shamefully-neglected places, where there was no longer pleasure in wandering among broken-down hedge-rows and unsightly trees"—a description highly applicable to their management up to the present time.

EVIDENCE AS TO THE BEST TIME FOR TRANS-PLANTING EVERGREENS.

THE best season for transplanting evergreens, although beginning to be more generally agreed upon than formerly, still remains a question on which opinions differ. With a view to its settlement, we some time ago solicited the opinions of some of our correspondents on the subject, and the following are the answers which they have supplied:

Mr. Barron, of the Elvaston Nurseries, Borrowash (than whom few men have had greater experience in transplanting), says, "Respecting the best time for moving Conifers and other evergreens, I may say, that during the last forty years, I have removed them with complete success nearly every day in the year. With machine-transplanted trees of large dimensions (from the extent of my operations), I have been obliged to take them in hand at any season, excepting during severe frost. From the nature of your inquiry, I imagine however, that you wish me to state the time I prefer. In my 'British Winter Garden,' published more than twenty years ago, I gave summer as the best time, and after another twenty years of extensive practice in most of the English counties, I still prefer the period when a tree is in an active state. When a tree or shrub is removed with a ball of earth suited to its size, and properly supplied with food, the plant goes on without any signs of removal. Should these conditions not be attended to, disappointment or entire failure may be expected."

Mr. James Brown, author of "The Forester," writing from Craigmill Nurseries, Stirling, says, "As a rule, the best time for transplanting Conifers is when the sap of the plants begins to move, and when their buds begin to swell. This takes place between the beginning of April and the middle of May, according to the nature of the season and the character of the species. When carefully removed at the stage indicated, I have invariably had perfect success."

"From a long and varied experience," says Mr. Davison, of White Cross Nurseries, Hereford, "I have no hesitation in recommending early autumn as the best time for moving Conifers and other evergreens, choosing dull or moist weather for the operation. Take them up with care and plant them immediately; then secure them well, by means of stakes and ties, from wind-waving—an important point; and well water them; repeat the watering every other day for a week, and syringe over head two or three times. By this time, if the work has been well done, the trees will have made fresh roots. In a favourable season, I consider the latter end of September or early part of October (before the trees cease to grow) the best time; but this will, of course, vary with the season and the continuance of the time during which the sap flows. On no account should the attempt be made unless the soil is well moistened, either by means of rains or watering, as in dry soil the roots, on the careful preservation of which success depends, would probably be bruised or otherwise injured. These remarks apply to nearly all evergreens, Hollies perhaps excepted. I have succeeded best with Hollies in spring, just as the young shoot is beginning to push and form new leaves."

Mr. Richard Smith, of Worcester, states that "Conifers, and all kinds of evergreens, may be transplanted freely from the end of October till the end of April, and, if the weather be cloudy, both earlier and later. The safest time for removing large trees that have not been transplanted for some years is early in autumn, as soon as the tips of the young shoots have become firm, and while the roots are in action. The next best season is late in spring, just when

the buds have commenced growth, but there is always some risk of injury from a drying east wind: the sun, also, may be hot enough to damage newly removed trees. The very largest trees may be successfully transplanted, but their weight and size render removal a costly undertaking. For a tree that would require two or three men to lift it, it is better, if time can be afforded, to prepare it the season before, by digging a circular trench 18 inches or more apart from its stem, and then cutting back all the roots, so that they may throw out a quantity of fibres, which act as feeders, and also materially assist in holding the soil together while the tree is being transplanted, for, after all, the secret of success is to keep a good ball undisturbed."

"The best time for planting Conifers," says Mr. Anthony Waterer, of Knaphill, "is just as they commence to grow, and as soon after as the young growth is sufficiently ripened, say April and the latter part of September, if the weather is favourable, *i.e.*, showery; we usually move all ours in those months; but a well-managed plant in a nursery may be safely removed at almost any season except in the midst of its growth, when, of course, the young wood 'burns;' and in the case of a Conifer the leader is of importance."

Mr. McNab says, "With proper machinery at my command and plenty of water for after deluging, I can venture to transplant Coniferæ at all seasons. For ordinary Coniferæ I generally recommend the time when the species commence to push out their young growths. If done when in this condition, and plenty of water given immediately afterwards, I scarcely ever saw them fail, that is if transplanted with adherent balls of earth. When lifted without balls the chances of success are very difficult. During the years 1866-69 about 1,400 Coniferous plants were removed into the new Pinetum formed in the Edinburgh Botanic Garden; they varied from 2 to 18 feet in height at the time of removal. Some were transplanted during every month in the year, and, with trifling exceptions, all succeeded well. Shading, syringing, and keeping the surface of the ground round certain plants covered with short Grass had to be attended to during warm weather."

In a useful little book by Mr. Kelly* "On Transplanting Large Trees and Shrubs," we find the following:—"The time for this work is autumn and spring; these are, undoubtedly, the best seasons for transplanting, but any season will suit the good large ball for evergreens, and for deciduous plants any time except in the height of the growing season, or in some instances immediately before the bursting of the bud. The best time for evergreens is during the dry warm summer, when the soil is warm and moderately moist. We transplanted a number of large old evergreens during the dry summers of 1869 and 1870, and in every case with complete success, although the soil was as dry as it possibly could be, and all the water used for the plants had to be carted half a mile. If deciduous trees are transplanted immediately before the bursting of the buds, some of them, such as the Birch, will bleed much wherever a root may happen to be cut. It is, therefore, much better to wait until the leaves begin to unfold (if it cannot be done in autumn)."

Mr. Marnock, who has had much practice in moving trees of all kinds, has promised to give us a short article on the subject, in which he will detail his experiences in full. We may, however, say that his practice differs widely from what were considered the best times of moving a generation ago.

"No doubt," says a correspondent, "late in April or early in May, and September are the best seasons for moving evergreens, especially if the plants are of large size; but, for choice, I vote for early autumn, for the simple reason that the ground is warm and the weather moist. For all evergreen plants, my experience leads me to consider from March to Michaelmas preferable to the other half of the year; but, for deciduous things, the wood should be ripe and the leaves falling before removal. On the subject of pruning trees at the time of transplanting, it is never wise to do so except in cases of excessive mutilation of the roots or of an exceptionally dry season; then to foreshorten some of the grosser shoots will reduce the evaporating surface, and whatever does that is, until new feeders are formed, for the good of the plant. Generally, when the leaves of evergreens drop off the plant will survive; but, if they wither on the branch, then success is hopeless."

Mr. J. Bell, writing from Strathfieldsaye, says, "Conifers and large evergreens may be transplanted with success at all seasons, but I much prefer the months of September and October, as then the plant removed, at once produces an abundance of fresh roots, and consequently makes much finer growth the following season than if the planting is deferred till early spring, when the earth is much sodden. I must add that I never water a newly-transplanted tree, but take care that the ball is sufficiently moist before it is removed; and, if the soil in which it is to be planted is duly watered and turned over, plants of every description will strike root in it at once."

Messrs. Veitch "always find Coniferæ to do best when planted in

autumn, as soon as the wood is ripe, say September and October, the exact time, of course, depending on the season."

The Scarlet Barberry.—This is most suitable for planting in woods and preserves. It is a very rapid grower—making shoots 5 feet long in a season—bushy in habit, and bears quite a profusion of scarlet berries, which render it a most conspicuous object in a wood in September and October. But, though it will thrive almost anywhere, it does not bear profusely in all kinds of soil. In the woods about Drumlanrig, in Dumfriesshire, where the soil is heavy and damp, and the climate so humid that the trees are grey with Lichen in winter, the Barberry flourishes uncommonly well. It is planted pretty freely in the open spaces, and when I saw it last there, in September, the woods were fairly lit up with it, producing a most striking effect. On a dry soil it grows well, but the fruit is neither so abundant nor so brightly coloured as that at Drumlanrig. The fruit is used as a preserve, and, owing to its thickly-set spines, the plant makes a good hedge.—J. S. W.

Tree Planting.—Do not plant near your house any trees that will ultimately attain large dimensions, or the day will come when you or your successors will have to choose between cutting down handsome and favourite old specimens, or suffering from the gloom and moisture generated by their too close proximity to the house. Many a fine old mansion has been thus overshadowed, and the inmates have had to elect between unhealthy damp and shade on the one hand, and the uprooting of a venerable tree on the other. Equally avoid planting tall-growing trees, where, when they attain maturity, they will interfere with a fine prospect, or intercept the view of any beautiful object. When first planted, their ultimate magnitude is overlooked, but the planter must have an eye to the future. In planting masses of trees, not only size and shape, but also the colour of the foliage must be an element in determining the selection of the species to be planted. The lively light green leaves of deciduous trees in spring, and even their graceful spray in winter, wonderfully relieve the sombre foliage of Conifers and other evergreen trees. An admixture, too, of those species of which the leaves change colour and assume bright tints in autumn, afford delightful glimpses and lively effects amongst other trees. For instance, the Birch and Tulip tree turn yellow, the *Cryptomeria elegans* dark bronze, and the Red Oak displays large masses of bright scarlet. These and others producing similar effects should be freely interspersed among ornamental plantations. Trees with variegated leaves, or with pendulous branches, also afford striking contrasts of colour and form, but they should be introduced discreetly, as, when too abundant, they lose their charm, and rather pall upon the sight. Do not encourage Ivy or other creepers to grow on trees which you wish to keep healthy and long-lived. These parasites do best, and look best, on decaying objects, whether trees or ruins, to which they add grace and cause no injury. Label all your choice trees and shrubs, or at least one of each species. Even if their names be familiar to the owner, they may be new to many a visitor, to whom it will generally prove interesting to know the names, and, if possible, the native habitat of the plants he surveys.—*Heatherside Manual*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Propagating Laurels: J. S. W. H. Laurel cuttings may be put in now. Well-ripened young wood, with a heel of old wood, is to be preferred, but if the young wood is not of sufficient length, a portion of the last year's wood may be retained. Put in the cuttings in lines on a north border.

Thuja gigantea as a Hedge Screen.—I am laying out a new garden (about 5 acres, including kitchen garden and shrubberies) on a somewhat stiff clay, but on a southern slope where I have well drained. I am anxious to know whether, on such a soil, *Thuja gigantea* is likely to make a good hedge about 100 yards long to divide kitchen garden from terrace, and whether it will grow close and stand clipping?—A. C. R. [Yes, *Thuja gigantea*, commonly called T. Lobbi, makes a good hedge screen at Newstead and various other gardens with which we are acquainted.]

A Buried Forest.—The *East Anglian Daily Times* announces the discovery by Mr. J. E. Taylor, F.G.S., of a buried forest in the Orwell. The forest is represented by a layer of peat containing trunks, leaves, and fruits of the Oak, Elm, Hazel and Fir, among which lie remains of the Mammoth. A bed of fresh-water shells, containing species not now living in the Orwell, underlies the peat. Mr. Taylor remarks that this sub-marine forest was contemporaneous with others along the coast which existed previous to the depression separating England from the Continent.

Abies Menziesii.—Very hardy, and grows with extraordinary rapidity; in some cases 3 to 4 feet in a year. Timber excellent. In California it grows to the height of 70 to 90 feet, with corresponding girth. This tree ought to be planted extensively for forest purposes, and would yield a profitable return much sooner than almost any other, either Coniferous or deciduous tree. It needs only to be tried and appreciated.—A. MONGREDIEN.* [Surely Mr. Mongredien, in his "Heatherside Manual," puts this tree very much too low. We have not seen it in its native state, but have seen specimens in England nearly as tall as the height he mentions. We had imagined it would attain 150 feet or more. Will some of our Californian readers kindly tell us?]

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THE KITCHEN GARDEN.

FORCING SEAKALE.

SEAKALE may be had in perfection from November till May; and carefully cooked and served with melted butter, it is equal almost to Asparagus. It is also one of the easiest of all vegetables to cultivate. It must, however, be blanched as it grows, or it is uneatable. Once let colour into it, and no amount of after blanching will get the rank flavour out of it. From the time its buds start to the time the Kale is gathered, no ray of light should reach it. It will be as good grown in a dark place indoors, such as a kitchen closet or cellar as under pots, closely enveloped with fermenting dung, tan, or other heat-yielding substances outside. A deep sandy saline soil suits the cultivation of Seakale best; but it will also grow well in any common garden ground if not too retentive. Common clayey soils may speedily be modified to suit Seakale by the addition of cinder ashes or sand. Though, of course, pre-eminently a salt plant, it will also grow well and continue in health without it, though good cultivators give it a sprinkling several times during the growing season. The best time to raise Seakale from seed or offsets is March or April; the seeds may either be sown broadcast in beds or in drills, about 2 inches deep; cover or tread in at once and rake smoothly. A pint or a quart of seeds will raise plants enough for any garden. They soon germinate, and may be left in the seed-bed or drill for one season. In March following transplant the young plants into rows 2 feet apart and 15 inches crown from crown; or plant the crowns in threes, pretty closely together, at distances of 2 feet. Another and better mode is to plant double rows from 1 foot to 18 inches apart, placing the plants in the two rows alternately, and leaving from 3 to 5 feet spaces between these double lines. This arrangement is favourable to forcing on the ground, as two rows of pots can thus be placed near together and covered with fermenting material which should consist of leaves with a sprinkling of dung, to quicken the heat. The double rows also facilitate another method of forcing. This consists in digging out a trench in the centre of the intervening space, 2 feet or more in depth and 30 inches in width, placing the soil on the crowns of the Kale and filling up all round with fermenting leaves and dung. Through this covering the Kale grows white and tender, and the earth, if light, is not found to impair its flavour. Offsets, cuttings, either of root or top, speedily form good plants, each crown, with or without roots, becoming a plant. These should be planted in rows, in the mode and at the distances prescribed for yearling seedlings, or as follows:—Seedlings and young plants may be grown in rows 2 feet apart, and the plants only from 6 to 9 inches asunder in the rows. All they require is to be kept clean during the summer, and at the end of the first season's growth take up as many of such plants as are required, and place them thickly in pots or boxes. Place the roots and crowns in a dark place, in a temperature of 55° to 60°, or exclude the light by covering them over with a flower pot, pan, box, short board, or some opaque body, such as sand or light earth. In about three weeks or a month, Seakale, white as silver, and brittle almost as blown glass, may be gathered in this way. If a continuous supply is desired you have only to introduce plants in succession, and treat them in the same way, once a month, fortnight, or three weeks. If watered when first planted they will seldom need a second application. The plants will also produce a second cutting, equal in flavour, though not in size, to the first. As this has to be forced from dormant buds on the stems, and takes longer time to grow, it is not worth waiting for, especially as plants are so cheaply raised and prepared. F.

JERUSALEM ARTICHOKEs IN MARKET GARDENS.

THESE are not much grown in market gardens in the neighbourhood of London, Mr. Poupart, of Mortlake, and Mr. Humphreys, of the Fulham Fields, being, perhaps, the largest growers of them in the districts alluded to. As this vegetable may be grown in almost any place, it is generally planted on gravelly pieces of ground that would be too dry for other crops. Knolls or mounds are usually cropped with it, and it is also grown along the sides of hedges, and in shady places. Mr. Poupart grows his stock of it on a very fine alluvial soil, open and somewhat dry in the summer, and the result is an abundant crop of fine tubers. After preparing the ground by manuring and digging or trenching it, the tubers are planted in February, in rows about 2 feet apart, like Potatoes, and are allowed to grow unchecked, and without being earthed up, till November. By this time they will be ripe and in good marketable condition. The stems, which are sometimes killed by the frost, are cut over close to the ground, and earth is spread over the tubers to exclude frost. The tubers are lifted for market as required, for it has been found that their flavour is better when treated in that respect like

Carrots and Parsnips, than when lifted and stored in pits. In February, all are, however, lifted, for if left longer they would be useless for culinary purposes; what are required for sets are then saved for that purpose, and the remainder sold. Although February is the common time for planting the Jerusalem Artichoke, it may be done at any time between November and March, using small medium-sized tubers for the purpose. F. W.

THE COLORADO POTATO BEETLE.

Our Potato fields are, happily, as yet, free from this beetle, which is at present so troublesome in some parts of America; in case, however, it should pay us a visit, we have thought it well to make our readers acquainted with its appearance in order that they may be able to detect its first outbreak. It appears that there is another insect, belonging to the same genus, which is often mistaken for the Colorado beetle. It is, however, easily distinguished from the genuine type, as the second and third stripes are always united behind, giving the appearance of a heavy black stripe, and the edges of all the stripes have but a single row of punctures; the legs also have a black spot in the middle of the thighs. This insect has been found feeding upon the Horse Nettle (*Solanum carolinense*), in South Carolina, and has been taken upon Potatoes and Egg plants in Alabama, and was particularly injurious to the latter. In the accompanying wood cut (for which we are indebted to the "Proceedings of the Department of Agriculture at Washington"), fig. 1 represents the true Potato beetle, *Doryphora decem-lineata*; fig. 3, the *Doryphora juncta*; and fig. 2 is an apparent cross between the



two, or a variety once found in the south, in which the heavy, thick black line of the *juncta* has a very fine yellowish line running partly through it longitudinally.

WHEN SHOULD A KITCHEN GARDEN BE MANURED?

THIS is a subject upon which considerable differences of opinion exist. Some advocate manure being got on and dug in through the autumn, others prefer the spring. It is a matter that requires to be looked at from two different points of view—the effect that the manure has upon the crop it is intended to benefit, and the effect the difference of time in applying it has upon the manure itself. So far as most vegetable crops are concerned, the more evenly the manure is spread through the whole body of the soil where the roots penetrate—the better it is for the plants that are to be fed by it. This will be evident to anyone acquainted with the action and requirements of vegetable life; and any crop so situated will make greater progress, and ultimately be more productive than a similar crop to which the same weight of manure has been given, but less evenly dispersed. The reason is obvious; the feeding roots from the time of their first emission, all through their extension through the soil, have always had their food supply regularly at hand without being compelled to traverse through portions of a poorer nature, and only at times come in contact with the manual food supply, although there in larger quantities. This, as will be seen, refers to solid manure, for, in the case of strong, quick-growing plants, no system of manuring is so effective as applying it in a liquid state at the time and season when growth is most active. This will be evident to anyone who has studied Chinese husbandry, where by far the greater portions of their crops receive the manure in a liquid or semi-liquid state, the cultivated vegetation of the country being particularly suited to such treatment. But, apart from the effects of manure upon the different crops to which it is applied, there is another important consideration—economy in its use, and how it is affected by the times and seasons at which it is put in the land. This operation is one that should be ruled by the nature of the manure, and also the description of both surface and sub-soil of the land on which it is applied.

Strong, heavy clays soils have the power of most effectually absorbing or extracting from the water that percolates through them whatever ammonia is there held in suspense, as also of retaining, and forming what we may call a storehouse for this most important element in plant food, until absorbed by the feeding roots in the water which they suck up from the soil, which after its upward passage through the plant is excreted through the pores of the leaves by evaporation, leaving behind the ammonia with which it was charged to combine with the other elements present and necessary to build up the vegetable fabric. If, then, soil of this strong heavy description has the power of absorbing and retaining the manurial elements, and not allowing them to be washed by the rains through and away deep down into the sub-soil, or carried away through the drainage, real or artificial, and consequently out of the reach of, and lost to, the crops we want to benefit, the manure may be applied at any time through the autumn when the land is uncropped. But even where the surface soil is of this strong loamy character, it is necessary that it should be sufficient in depth, so that the rain water, charged with this plant food it so quickly extracts from the solid manure directly it comes in contact with it, may not pass through the upper or surface soil too quickly, and so carry off a portion of the ammonia. A great deal also depends upon the nature of the sub-soil. Where such happens to be of a loose sandy character, or gravel, unless the surface soil, however retentive, is some 2½ feet or more in thickness, manure for spring or summer crops should not be applied until near the time the crop is put into the ground, otherwise very serious waste must necessarily follow; if, on the other hand, the sub-soil is of a heavy clay nature, even if the surface soil is shallow, the manure may, without fear of loss, be put in the land at any time when it is clear. Sand has very little power to absorb ammonia water, in which it is held in suspense, running through it in almost the same condition in which it was applied; and, in the same proportion is light sandy soil unsuited to receive manure until as near as possible to the time when the crop will be in a condition to utilise it. All soils of a gravelly nature are in the like similarly unsuited for autumn manuring. The nature of the soil has also a good deal to do with the quantity of manure that should ever be applied at one time; strong deep loams may have very heavy dressings given through their ability to hold for a lengthened period whatever portion existed over and above the requirements of the crop that immediately succeeded the application; on the other hand, in the case of light soils, it is a waste of manure to give more than will be sufficient for the immediate crop. T. B.

Veitch's Self-protecting Cauliflower.—We have sent you a head of this Cauliflower which we have received from one of our growers in Yorkshire. We believe it will prove a valuable variety for use in November and the beginning of December, and, being so thoroughly protected by the foliage, it will withstand several degrees of frost. Subjoined are the dates of sowing the seed of this variety, Autumn Giant, and Walcheren, and the result:—Veitch's Self-protecting sown April 8th; Veitch's Autumn Giant sown April 18th; Walcheren sown April 29th. The result is that the two latter are off while the Protecting is only now coming in.—JAMES VEITCH & SON. [The specimen sent exhibited unusually luxuriant growth, the leaves being upwards of 3 feet in length, and some 14 inches in width, with wonderfully strong mid-ribs. The head, which was well protected, was white, about 8 inches in diameter, close and firm.]

Lime Kiln Heating.—Messrs. Thyne, of Glasgow, have adopted the Cowan system of heating with excellent results. The kiln employed is 12 feet in depth, and is filled to the top with alternate layers of coke and limestone, which may be burned quickly or slowly, as desired. About 2 feet from the surface is a ring boiler, and over the whole mass an ordinary saddle boiler, the two acting in concert. Connected with the boilers are a series of flow pipes and valves, through which the water, after being heated, passes to the pipes led into the hot-houses. If it is necessary to get hot water quickly, this may be effected by coke alone being used as fuel, while a diminished temperature is obtained by withdrawing the water through return pipes, with which the boilers are also fitted, and making it circulate in a waste cistern until it is again required in the hot-houses. In this way the kiln may be kept continually burning, and more or less heat used at pleasure. The apparatus in this case supplies 7,000 feet of 4-inch piping, and as regards cost, Messrs. Thyne are supplied with coke at 8s. a ton, and limestone at 10s. a ton, in both cases delivered for that sum at the nursery, while lime-shell brings 24s. per ton. One ton of coke is sufficient to burn 3 tons of limestone, the product of which is 2 tons of lime-shell, so that every 38s. spent in raw material brings 48s. for the manufactured article, the profit

sufficing to pay cartage from the works and the wages of a man who looks after the kiln. In this way the heating of the hot-houses is effected without any expense, whereas formerly Messrs. Thyne paid not less than £300 a year in coal and wages.

THE HOUSEHOLD.

COLD VEGETABLES.

SERVANTS often waste vegetables, even at times when they are scarce and dear. Cold Greens, for instance, are frequently thrown away as not eatable. This is wasteful; they are as good as when first cooked if they are thrown into a saucepan of boiling water, or into a basin of boiling water, and covered for two minutes; then strain the water from them, and serve hot. Cabbage of all kinds, and Broccoli and Brussels Sprouts, Peas, &c., can be warmed in the same manner.

Spinach may be re-warmed in a basin in a hot oven two or three times over with great advantage to the flavour of that vegetable if a little more butter be added.

Parsnips, when dressed whole and cold, should be mashed with butter, milk, and salt, put into a small buttered basin, made hot in the oven, be turned out in a dome shape, and served hot; they are better in this way than in any other.

Carrots should be cut in round pieces half an inch thick, and warmed in butter sauce or thick gravy. Carrots are extremely useful to keep ready dressed for an emergency or need in cooking. Large Carrots should be scraped or pared, be put whole or cut, once across their length, into boiling water, with a bit of fat or dripping in it, and be boiled two hours, then served unsplit, but cut into as many pieces as may be liked. Afterwards, when they are cold, they may be cut into any shape for serving with ragouts or hashes, or split into narrow strips for soups, or grated for the same purpose, or for puddings. There are two things to be avoided in warming all these vegetables, they should not be warmed in a saucepan, nor touched with an iron spoon.

Potatoes, when whole and cold, may be dipped in melted bacon fat or dripping, have salt sprinkled over them, be well floured, and baked in the oven on a tin, and turned round when needful; or cut in slices, floured, and fried in boiling fat, drained on a wire-drainer, or on paper and served hot; or chopped finely, salted, and fried in a little hot bacon fat; or mashed and mixed with a little milk and butter, and be formed in buttered shapes, as in tea-cups or large egg-cups, then rubbed over with a bit of butter, be floured and browned in the oven or before the fire; or fried in batter, by cutting them into rather thick slices, beating up an egg with a tablespoonful of cold water, and a tablespoonful piled of flour, then dip each piece in and fry in boiling fat; or Greens dressed cold and then chopped, and fried with the Potatoes, also chopped; or Carrots dressed and cold, chopped finely, mixed with the finely-chopped Potatoes, and fried. Potatoes, when young and cold, can neither be mashed nor chopped, but they can be rolled in a little clarified butter, or bacon fat preferable, and browned over a clear fire on the gridiron; or young cold Potatoes may be warmed in boiling Parsley and butter, and with a dash of Lemon-juice over them.

Celery.—There is nothing more useful in a house than this. The outsides will serve as flavouring for soup, and the hearts cooked for the table, or to be eaten with cheese. First of all, remove the outside leaves from the hearts, and trim the roots, not cut them off. Have two large pans of water, one of warm, the other of cold water; wash each outside stem of the Celery in warm water with a brush, and throw it into the cold water, also the hearts; and all gravel, insects, and dirt falls from the Celery at once; take all the outside pieces and pare away every faulty and discoloured bit; then split each piece in two, or three or four, and cut it crossways in very small bits, and put it in a pie-dish. The hearts of the Celery must be laid aside in water, and when a head or more is wanted it can be taken from the water and cut in proper shape to be served at table, but before it is put into the last water any discoloured bit must be cut from it. To the small Celery in the pie-dish add one or two large Turnips pared thin, then cut downwards from the head to the root in a dozen cuts, but not separating the Turnip; then turn the Turnip round in the hand and cut it the other way in a number of cuts; hold it on a plate and cut it across. The Turnip will now fall into many square pieces. A Carrot may be cut in the same way, and this mixture will last for a week to put into cold soup, stock, or broth, and well boiled, to give flavour to it. Thus there is thrift of time and thrift of vegetables, for it takes no longer to prepare this for the consumption of a week than it does for one day. Moreover, Celery thus prepared will keep good, crisp, and well-flavoured for a fortnight, oftentimes for a longer time,

THE ABBEY GARDEN, REDDITCH.

ABOUT the end of the last century it was more usual than it is now to meet with artificial ruins in connection with gardens; and those who have read, or can remember having seen the "Clandestine Marriage," will call to mind how Mr. Sterling, when showing Lord Ogleby his grounds, complains that his ruins cost him many hundreds to keep in repair. At the present day artificial ruins are almost confined to "tea gardens" or other places to which the "working man" resorts "to spend a happy day." Indeed, such constructions, for many reasons, can never be pleasing to a well-educated mind; they are false in material, false in form, and false in position and use; and though Nature may clothe them ever so luxuriantly with Ivy, Wallflowers, and Mosses, she never hides their puerility or their deception. Over the real ruin she kindly throws her green mantle, hiding the wounds inflicted by man, and shielding it as far as is in her power from those of Time the destroyer; and where some venerable remnant of antiquity occurs in a garden, as at Margam and elsewhere, it is legitimate to use it as an ornamental feature, and to aid Nature to clothe it with vegetation. It does not, however, fall to the lot of every person to have *in situ* on his grounds such ancient remains, either ecclesiastical or baronial; and I confess that I do not approve of the removal of these into private gardens, or the transplanting of such monuments from the sites which they may have occupied for centuries, unless it be absolutely for their own preservation. In one case, however, such a removal took place under my own care and management, and in this, as the object of preservation was accomplished, and beauty and interest that would otherwise have been lost, were added to an easily accessible English garden, I do not consider that any offence was done either to propriety or good taste. The garden to which I allude is situated in the grounds of Captain Bartleet, at Redditch, in Worcestershire, and is known as the Abbey Garden, from its main features consisting of exhumed remains from the neighbouring (lost) abbey of Bordesley, in combination with such flowers, trees, and plants, as are usually found in connection with monastic ruins. Before describing the garden itself, however, it may be well, perhaps, to give a short account of the men to whose labours the agriculture and horticulture of the valley around Redditch owe much; and, but for whose settlement there in the middle ages, the present Abbey Garden would never have existed; and I do this because I believe that few are aware of the influences which at least one class of monks had upon the cultivation of the land. It was then in the troubled reign of King Stephen when the sword was seldom sheathed, and the trumpet was everywhere blown for wars, that there came to live in the Vale of Arrow a community of Cistercian monks, a religious order of men, who, leaving Learning and the Arts to others more ambitious than themselves, studied the peaceful occupation of cultivating the soil. No sooner had these monks of Bordesley settled in their new convent by the river-side than they began a number of works, many traces of which remain to the present day in the form of huge dams thrown across the valley, or raised in other places where it was desirable to erect water mills or to construct ponds for fish, or water fowl. They planted their orchard, Vineyard, and garden, and taught the church vassals the art of clearing, draining, and planting the soil; for it will be well to bear in mind that in those troublous times the abbey lands were the only places where cultivation of the soil could be peacefully and successfully carried out. Owing to the freedom which these monks enjoyed from the evils of war, and of that ambition which beset the more learned orders, the Cistercians and the hinds who gathered around their convents could devote their time to objects useful to man. Doubtless, it was the wars upon the Welsh marches which prevented the present fruit-growing county of Hereford from taking its due place in the middle ages, for we do not call to mind any passage in any old writer where it is celebrated for that which now calls forth the admiration of the stranger—in spring, when the orchards are silvered with blossoms, or in the autumn, when they are golden with fruit. In Robert of Gloucester's "Chronicle" the palm of fruit-bearing is given to Worcestershire.

In the county of Canterbury most fish is,
And most chase of wild beasts at Salisbury, I wis,
At London ships most, and wine at Winchester,
At Hertford sheep and oxen, and fruits at Worcester.

While the Vineyards of Gloucestershire produced a wine little inferior, in William of Malmesbury's estimation, to that of France, the characteristic fruit of Worcestershire was the Pear. The Black Warden from long ago has figured on the shield of that county; the Pear tree was the badge of the Worcester men at Agincourt, as it is now in 1874 that of the Worcestershire Rifle Volunteers; and a fine Pear tree, formerly growing in the Foregate of the "Faithful City," attracted the admiration and praise of Queen Elizabeth. Without doubt we owe many plants and fruits, not indigenous, to the monks, for the convents were the hotels and guest houses of the middle ages, and palmers and pilgrims brought thither the seeds of such plants as had excited their curiosity or their appetite in foreign parts, or which had grown in sacred soils. The Glastonbury Thorn was brought from Palestine, and asserted its foreign origin by blossoming at a season deemed miraculous in this country. From illuminated MSS. we should judge that the monks cultivated some flowers merely for their beauty; but the chief object of monastic gardening was to grow those plants and herbs which were useful as food or medicine, though of "vegetables," using the word in its domestic sense, there would be few varieties. Probably our English Strawberries owe their excellence to the pains taken by these ecclesiastics, and the Bishop of Ely, if the testimony of Shakespeare may be relied upon, had devoted some of his leisure time to the growing of them.

This garden, Sir Christopher Hatton's, and others in Holborn, were doubtless in high cultivation in Shakespeare's day; but, though these and monastic gardens generally have passed away, there yet remain drawings of some, as, for instance, of the gardens and Vineyards attached to Canterbury Cathedral, which show that great pains were taken to select proper sites, and to secure the proper irrigation of the land chosen. These remarks have been made merely to remind the reader that the monks were not, as is too commonly supposed, a class of men whose duties lay wholly in religious exercises. But now, in order to come at once to the subject of the present article, we must pass over a long lapse of years, during which time the Abbey of Bordesley, after the monks had been expelled, and the materials of their dwelling had been sold piecemeal, gradually disappeared from the face of the earth, until a few green mounds, and one or two decaying Pear trees alone marked the site of the building and orchard. It was in the year 1864 that Captain Bartleet was permitted, in order to verify some points in the "History of Bordesley Abbey," to make some excavations among the green mounds just mentioned. In the course of laying open these, a number of hewn and carved stones were found, as well as encaustic tiles of a wonderful variety of patterns. To bury these again would have been to hide their beauty and interest perhaps for ever, while to convert them into a rockery would have been to degrade and injure them. Captain Bartleet, therefore, resolved to make them the leading feature of an abbey garden. To accomplish this, a square, corresponding with that of the original cloister of the abbey, was marked out on the scale of 1 foot to the yard. It had two entrances, one to the north, just where a doorway was ascertained to have stood in the original building, and another on the west, and at these two entrances were placed the remains of doorways discovered in the excavations; the stones being cemented together with a cement coloured to give it the appearance of age. Along the line of the square, broken walls were constructed of hewn stone, and into these were built interesting pieces of carving; while where the supply of the hewn stone failed, Yew trees from the Arboretum at Worcester supplied the place, and continued the line of enclosure. In one part of the wall would be a broken window, in another the base of a pillar or a piece of shafting; and to the east was a little ruined chapel, constructed out of materials which furnished windows and arches, nook shafts and capitals of pilasters, the floor being laid with encaustic tiles more or less perfect. Amongst the stones Mosses were planted in such a manner as not to hide any of their peculiarities; whilst Ivy and creeping or trailing plants were trained up, or to hang

over, plain portions of the walls, but kept carefully cut away where their growth would injure or hide a capital or other piece of carving. Within the cloister, and at a distance of about 6 feet from the walls, ran four sunken walks parallel with them, thus leaving a square platform in the middle and four other platforms on the sides. All these were covered with turf, and little groups of carved stones were placed in various spots about them, while the base of one of the great pillars from the minster nave occupied the centre of the square platform. It will be seen that this arrangement of the stonework gave ample scope for the planting of Ferns, Ivies, and Mosses about the garden, in such a manner as to harmonise with the tone or feeling of the place. Not that the Abbey Garden is restricted to these, though they, with curious Grasses, Thorns, and "weeds" form the chief part of the "decorative" vegetation, for we may consider the Yew trees rather as part of the "construction." Among the Thorns is the curious *Cratægus tortuosa*, a plant whose pet aversion is a straight line. As this garden was constructed on part of the older one attached to The Shrubbery, several trees and plants of some size grow among the ruins, thus giving to the Abbey Garden an appearance of much greater age than it really possesses.

J. M. WOODWARD.

THE WATER-SUPPLY FOR COUNTRY MANSIONS, GARDENS, &c.*

THERE are many very large establishments, such as hospitals, barracks, prisons, union workhouses, educational institutions, &c., situated in isolated positions, and in which large numbers of persons are lodged and maintained, where a good and abundant supply of water is of the greatest importance and necessity, both for consumption and as a protection against fire. In addition to these objects of first importance, I may enumerate others, such as the many purposes of ornament or pleasure, served by an ample water-supply, as well as its absolute necessity for the successful prosecution of horticultural pursuits, and its great value in cases where large numbers of cattle and horses are kept in situations where great labour would be necessary in pumping the supply or conveying it from a distance. The qualities of water vary very considerably. The softness of water is a quality much sought after. This property is found to vary according to the source from which it is obtained, some districts supplying soft water (which is the purest form), others affording hard water. Those waters which come from the chalk or limestone formation are invariably hard, varying generally from 16 to 20 degrees of hardness (Clarke's scale), that is so many grains of carbonate of lime in a gallon. These, upon boiling, will leave in a short time a thick deposit, or fur, upon the inside of boilers, kettles, &c.; but by this process the water becomes softer in proportion to the lime precipitated. Waters from the green sand and new red sandstone formations are probably the purest and softest of any of the kinds which are drawn from the earth; but the softest, and those containing the least degree of hardness are those which are gathered from elevated and mountain countries, having 4 or 5 degrees of hardness only; but they usually contain inorganic substances, and are frequently tinted with the colour of the herbage or soil on the surface of the land from which it has been gathered. Except in appearance, however, this water is the best for clothes-washing, boiling, tea-making, brewing, &c.; while the hard and well-aerated waters are more sparkling, fresh, and agreeable to drink. This leads me to the subject of filtration. The materials generally used for filtering purposes are sand, and gravel, and animal charcoal. It has been found, however, by experiment, that the pores of the charcoal, although it absorbs organic matters for some time, will sooner or later become clogged, and will cease to arrest those matters; and not only does the charcoal cease to act, but it will return the matters which it at first absorbed. However, for small filters, where the material can be replaced or reburnt, it will answer the purpose. For filtering reservoirs, sand and gravel of various sizes have been found the best medium. The sand must not be too fine, lest it should become choked, and it must be freed from admixture with all ferruginous and other matters. In the supplies that we are here considering, it will rarely be necessary to provide filters in the reservoirs. It is worth while to mention a curious fact in connection with open reservoirs. It has been observed that, in shallow reservoirs, there has been a growth of confervæ, and, on the decay of this, animalcules have sprung into existence; but this has never occurred in reservoirs containing a depth of 15 to 20 feet of water, or where they have been covered and kept in the dark: it

is, therefore, necessary to bear this in mind when constructing service-reservoirs. In order to confine the operation within the smallest possible limits, the filter may be so contrived on the premises as to deal only with the water to be used for drinking, washing, brewing, &c.; while for stables, cattle, gardens, house-washing, closets, flushing sewers, and fire-service, the water may be left unfiltered. It will be necessary to have the tank or reservoir occasionally cleaned out; and it should, therefore, be constructed in two parts, so that one part can be cleansed while the other is full, and a continuous supply be thus ensured. Reservoirs or tanks should be left uncovered when they are in the open country and away from smoke, dust, leaves of trees, and other polluting sources; but, if near buildings, they should be covered, to keep these matters out, as water is very quickly impregnated by such, especially when shallow. As before stated, the greater the depth the less liability is there to this danger. There are probably few towns supplied with such good water as London; all that is taken from the Thames and the Lea being filtered, and we know that in both cases the sources are chalk and the strata both above and below that formation. As a rule, all the softest kinds of water are most injurious to and destroy iron more quickly than the harder water; but this is, in a great measure prevented by Dr. Angus Smith's composition for application as a lining to iron pipes, tanks, &c. Dr. Voelcker states that water which has been acted upon by lead is not so injurious as we have been led to suppose. The waters which act upon and dissolve lead are those which contain organic impurities, alkaline constituents, such as carbonate of soda and potash, and those in which carbonic acid is present. Fortunately, however, the lead may easily be got rid of. A small piece of zinc in the water will destroy the injurious effects, because zinc is more readily attacked than lead; also, it will be precipitated by the carbonic acid which will be absorbed by the water on exposure to the air. An ordinary filter will arrest the particles of lead. From the report of the Water Supply Commission, it appears that moderately hard water, the hardness of which is due to the presence of carbonate of lime, when used for drinking purposes is not injurious to health. Persons, however, who are accustomed to soft water, might be disagreeably affected by changing it for hard water, and *vice versa*; but those who are in the habit of using hard water of that quality are not injuriously affected by it. But, although there is no evidence to show that water which is hard, owing to the existence of sulphate of lime, is absolutely injurious, water of that quality of hardness is objectionable. The evidence proves that, for washing, soft water is far preferable to hard, and is also more economical.

Quantity of Water Required for a Country House and Gardens.

The next branch of the subject which we have to consider is the quantity of water which it may be necessary to provide for a mansion and all its belongings. The basis of this calculation is, that of the number of persons who compose an establishment, and are dependent upon and require an ample supply; and, in addition, a considerable allowance should be made for storing it, to meet contingencies such as fire, the lessening or total failure of springs or streams in long droughts, and other causes at those particular periods, as in summer, when larger demands are made upon the supply than in other times of the year. In an establishment such as that of a nobleman or gentleman in the country, the personal requirements may not be more than ten gallons per head of residents per day, but, for all other purposes, such as house-washing, also for horses, carriages, cattle, watering pleasure and vegetable gardens and roadways, fountains, cooking, brewing, clothes-washing, and several other purposes, ten additional gallons should be provided, making twenty gallons per head as the probable consumption of the establishment; and, in addition to this amount, there should be provided, in case of fire, a storage equal to three months' consumption, in the event of the supply failing in dry weather. It would not be safe, in the event of fire, to depend upon the pumping or other means of raising water, or gaining it by gravitation to check fire, as much time is lost in getting the pumps to work, and the quantity may not be sufficient, and the force inadequate to send it to the required height. In some situations, where farms and villages on an estate are situated at great elevations, and where water is difficult to procure, or probably not of good quality—and again, in the case of fire—it may be necessary that the storage for the mansion should allow by a slight increase of its capacity to be extended to those localities. Another want sometimes arises, and that is the supply of ponds for cattle in the fields in summer. For this a very small pipe would be needed. It may be found agreeable to form a skating-pond, which requires a very small quantity of water to keep it supplied.

Mode of Supply.

The modes of supplying water are by pumping, either by steam or water wheels, turbines, horse-power, or by hydraulic rams, from

* From paper by Mr. R. B. Grantham, C.E., at the Royal Institute of British Architects.

wells or from reservoirs, rivers, or streams, at a lower level than the building to be supplied, and thus raising it, so as to command the highest roof of a mansion and its surrounding buildings. In certain situations it is possible to gather and collect water in a tank or reservoir at such an elevation that it may, by its own gravity, be conducted to the premises by iron pipes at constant pressure, so that all parts of the buildings, gardens, &c., may be supplied without the expense of pumping or lifting. The latter mode of supplying water is far preferable to all others. The next best is that of pumping, either by steam, horse, or water power, up to a reservoir constructed on elevated land, so as to command the mansion where the mansion and buildings are situated on high land, and no higher can be procured within a reasonable distance, a tower should be erected which may be made more or less ornamental, according to the character of the architecture of the mansion. Upon this a tank should be placed; but a tank of this description is always objectionable, and must be limited in size, owing to the great expense of construction and the difficulty of combining a pleasing appearance with a large capacity. Where there is high ground a reservoir may be adopted, which may be constructed of brickwork or concrete, and puddled. The increased cost to attain size is not the same in proportion as in the case of a tower. Even the length of piping from the source of supply to the reservoir, and thence to the buildings, should not weigh against the adoption of the reservoirs built on high ground.

Details of Service and Water Supply.

I now wish to call your attention to a short description of a case of water supply which has been successfully carried out, and which affords an illustration of what is necessary in a fire service. The case referred to is one which I have lately completed at Somerley, the seat of the Earl of Normanton, in Hampshire. It was at first proposed to erect a water-wheel on the river Avon, and pump the water from that river to cisterns on the top of the house. This was afterwards abandoned in favour of pumping by steam from a stream on the north side of the house, the engine being further employed in sawing the timber of the estate, for repairs, &c. By attaching a homestead, the engine could be made to work the chaff-cutting, thrashing, and other machines, when not engaged in pumping. This plan was adopted, but the homestead was not built. Some springs of excellent water—soft, clear, and free from pollution—were found issuing from the sand and gravel, with occasional beds of clay, which compose the hills running north and south through the estate, and bordering the valley of the Avon. These contain a large body of water, forming, as it were, a natural reservoir. Their waters were collected in a service-tank at a high level, from whence the water descended to a pumping well near the engine. This well was constructed near the stream before alluded to, in which a dam was placed to keep up the water, so, that if necessary, the stream of water could let into the well. This water is of good quality, but rising on a moor in peat soil, is discoloured, and contains inorganic matter; the engine is of twelve-horse power, and drives a large circular saw for cutting up native timber, which, at times absorbs all its power. The water is raised up a rising main of 3 inches in diameter for 1,452 yards, to where it meets the 6-inch main, by which it is continued to a reservoir on Somerley Heath, a distance of 1,178 yards, altogether 2,630 yards, equal to 1½ miles, at an elevation above the engine of 110 feet. The reservoir, built of concrete, on the highest ground that could be found within a reasonable distance of the mansion, is open, in a clear atmosphere, so that the water is well aerated and kept fresh. It is 10 feet deep, 60 feet square at the water line, and contains 150,000 gallons. The engine generally pumps from two and a half to four hours a day (according to the consumption at the mansion) at the rate of fifty gallons per minute, which is much more than is required. The height of the water in the reservoir is indicated in the engine-house by means of Bourdon's Pressure Gauge, so, that the engineman can at all times see whether the water is falling, and when it is necessary that he should pump. From the reservoir to the mansion the distance is nearly one mile and a half, and the water is conveyed to it by a 6-inch main. The house has recently been raised one story higher and enlarged, with a conservatory, extensive terraces, with fountains, carriage-drives, and additional garden space, and all laid out with very great taste and elegance. The bottom of the reservoir is about 15 feet above the tops of the roofs, or the surface of the water is 25 feet above the roofs. The whole of the pipes are of cast iron, well jointed and lined with Dr. Angus Smith's composition, which prevents the corrosion of the iron by this kind of water. On its way to the mansion from the reservoir, it supplies the flower and kitchen gardens, the stabling and laundries. There are stop-cocks to shut the water off, if necessary, for repairs or additions to the pipes, taps, &c. The sizes of the various pipes are also given. Outside the mansion the positions of the hydrants are all indicated upon the walls near or opposite to them. Stand-cocks can be fastened in the hydrants,

and to them the lengths of hose are screwed on. The pressure in the pipes is sufficient to throw jets of water from these hydrants over and upon the roof of the mansion and gallery. Within the house the pipes are laid along passages, corridors, and under the drawing-room and saloon to the interior, under the picture-gallery, at both ends of which are hydrants immediately under trap-doors in the floor with hose, wrenches, and spanners ready at the shortest notice to turn the water on, and it can by these means be directed to every part of the gallery. The water is also raised by upright pipes to every floor of the house, and stand-cocks and hose are placed in recesses in the walls readily accessible and at such intervals that two lengths of hose from different stand-cocks can always reach and discharge into every room in the house. There are also large cisterns in the roof for supplying the closets and the warm-water apparatus, &c., all over the house. The working pressure on the mains at the house in this case is about 39lb. per square inch, which causes a sufficient discharge through the nozzle of the hose if worked only from the engine, but, if worked from the reservoir, several jets could be worked at the same time. The cost of the whole service of pipes and the reservoir, but exclusive of the engine, which exerts power for pumping about 4-horse power, was about £2,000, and the annual cost does not exceed £40. The amount of property which is protected is very considerable, comprising the building and furniture, and the gallery which contains a very valuable collection of paintings, statuary, &c. I may conclude by remarking, that unless proper attention is paid to the sources of supply being protected from pollution, the reservoirs, pipes, taps, pumps, &c., kept in working order, all the care expended in designing and carrying out the works may be abortive, and they may become a source of loss and disappointment, and even of positive annoyance and injury. Careful supervision and frequent exercise of all parts of a fire service are essential, and it should be practised say once a month, and a mechanic, such as a carpenter or smith, should be trained to work the system, making himself acquainted with all its details, and with the premises, so that he might be able to superintend the service, make slight repairs, &c. Such a person could probably also attend to the drainage and such like matters of the whole of the premises. Most serious consequences have resulted from the want of a practised organisation, even with every appliance at hand, and experience proves what confusion and alarm prevail on the sudden outbreak of fire, when all concerned are generally tumbling one over another, forgetful of everything but self-preservation. This is quite natural, and can only be counteracted by the confidence which will result from the existence of an effective and well-ordered fire service, under the control of a person capable of directing its use to the best advantage. Protection from frost was secured by laying the pipes at a depth of from 2 to 3 feet below the surface.

Stoke Newington and Hackney Chrysanthemum Show, Nov. 17th and 18th.—This was an excellent exhibition, both cut blooms and plants in pots being much above the average. Of the former, excellent stands came from Messrs. Sanderson, Smith, and Berry. Among plants in pots were some fine standards and pyramids, and also some well-bloomed specimens of other kinds, especially a collection from Mr. Rainbow, to which a silver cup was awarded. Some extra fine specimen plants were likewise shown by Mr. Drain, Mr. Holmes, Mr. Butcher, and Messrs. Dixon. Of new Chrysanthemums there were but few. Six new fringed Pompons were shown by Messrs. E. G. Henderson, viz.—*M. Ulrich*, purple, with white tips; *Ernest Benary*, pink, very full flower; *Marc Aureli*, orange and red; *Le Parnasse*, bright puce, yellow tipped; *Lucrece*, orange and brown; and *Denticulatum*, light rose, with yellow eye; these are new forms, which will prove useful for bouquets. The same firm also exhibited three new Pompons, one of which, *Fabiola*, having a pale lilac flower of fair form, received a first-class certificate; the other two, *Aurore*, a bright orange, and *Cendrillon*, a very fine rosy-lilac, of the *Trevenna* type, were also very good. A promising large-petalled yellow seedling flower was shown by Mr. A. Carey, Lisle Terrace, Guernsey. A new sport, called *Primrose Duruflet*, was also shown, but not in good condition. A very nice dinner-table decoration was put up by Mrs. Butters, composed of medium-sized flowers of Chrysanthemums, Grasses, Ferns, and scarlet Geraniums, the whole nicely finished off with *Epiphyllum*. Some nice bouquets were shown by Mr. Smith, Kingsland Floral Hall, likewise some good fruits, the whole being relieved by some well-grown plants of Palms, Ficus, Ferns, Dracenas, and Araucarias.

OBITUARY.

It is with regret that we announce the death of Mrs. Hooker, of Kew, which happened on the 13th inst., in the forty-ninth year of her age. Mrs. Hooker was a daughter of the late Professor Henslow, of Cambridge, and the wife of the distinguished President of the Royal Society, and Director of Kew Gardens. Mrs. Hooker translated *Le Maout and Decaisne's "Traité Générale de Botanique,"* which was edited by her husband; and we are sure that all who know Dr. Hooker will sympathise with him in his bereavement.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

RECENT ROSES.

By S. REYNOLDS HOLE.

ON Saturday, November 14th, while not a few of his mates were drinking away their wages and their health, a working man, from one of the foundries in Nottingham, set forth afoot for Mr. Merryweather's nurseries, fourteen miles away, at Southwell, purchased half-a-dozen Rose trees, and walked home again. I call that man a florist; I admire him more than Mr. Stanton or his bicycle, or Dick Turpin riding to York. I rejoice to think what happiness he will have in his tiny garden upon the hills by Nottingham when once more it is the time of Roses; and I know that hundreds who read THE GARDEN will sympathise with my hero worship. Are they not, many of them, at this very season showing signs of a like enthusiasm? Do we not see at all stations, and upon every carrier's cart, long packages deftly cased in matting or in straw, tightly bound with tarred twine or twisted osier, on their way to gladden Rose-loving eyes in cottage and grange, in parsonage and hall? For whenever in this month the weather is genial is the best time for planting Rose trees; and having spoken of those varieties among our older favourites, which I would most advise the young rosarian to plant, I go on, in fulfilment of my promise, to speak of recent introductions. Just reminding the amateur that Etienne Levet and Francois Michelon were not only the best Roses of their year (1872), but that they are of such superior beauty as to claim a place in every collection, I will pass on to those candidates which have subsequently sought election into the senate-house of Senateur Vaisse. First, I must compliment my friend, Mr. George Paul, of Cheshunt, upon the quiet, unpretentious manner in which he has introduced two of his children into the Rose world. We gardeners, it is well known, are the fondest of fathers. We don't go quite mad, like the French, and dance with joy round a fourth-rate seedling, crying, "ravissante, charmante, séduisante, tip-topissante," &c., but we lose much of our solemn British reticence, and not a little of our strict ideas of veracity, upon the birth of a novelty. Comparatively speaking, the raiser of Cheshunt Hybrid and of my namesake, Reynolds Hole, has displayed a marvellous modesty—nay, he has almost treated his offspring as rough masters teach their pupils to swim—throwing them in to the water, and bidding them get ashore as they can. They have come to the surface, and acquitted themselves nobly. I can commend Cheshunt Hybrid (its name must have killed it if it had not been blessed with a robust constitution) as an excellent garden Rose, yielding an abundance of ruddy well-shaped flowers; and, as for Reynolds Hole, every friend who came near was taken to see it in September last, when, for many days, it was, to my intense delight, the best Rose I had in my garden. It is remarkably rich and striking in colour, all aglow with crimson tints. In habit it shows "notes of fatherhood" and of resemblance to Duke of Edinburgh, its parent, and has much similarity to myself, in the abnormal longitude of its limbs. Other rosarians, whom I trust, including "D. of Deal," have written to me, after seeing the Cheshunt Roses, to congratulate me upon the compliment which has been paid, and I feel sure that, when my synonym is established, acclimatised, and known, he will have that which I shall most heartily envy him, the smiling welcome of those who love the Rose. Two Duchesses of Edinburgh, too distinct in their complexion and form to suggest a rivalry, meet us next as we turn the pages of our new "Book of Beauty." The Hybrid Perpetual sent out by Mr. Bennett, of the Manor Farm Nursery, Stapleford, Salisbury, is a noble Rose, with the free healthy growth and leafage of Madame Boll, and the large, fresh, blushing bloom of Marguerite de St. Amand. The Tea-scented Rose from Messrs. Veitch, of Chelsea, is more adapted for the conservatory, drawing-room, and bouquet. There is no other member of its family at all

like it in brilliancy of colour—a vivid cherry-red; and it promises to be as generous in the quantity, as it is refined in the quality, of its flowers. Mr. Charles Turner, of Slough, has favoured me with blooms of some seedling Roses, which he purposes to send out in June next, and which encourage me to hope, more confidently than I have hoped heretofore, that we may at last succeed in raising Roses in England as abundantly and as satisfactorily as they succeed in France. I have not seen better wood or foliage, or more perfect Roses than Royal Standard and Miss Hassard. The Rev. J. B. Camm, and J. S. Mill had suffered too much in the journey for me to realise their merits, but the ruins were beautiful. There was also a Rose called William Gater (after one of the best rosarians that ever potted or budded a Rose), which ought to be, and is to be, a favourite. I have not had the pleasure of seeing Mr. William Paul's Queen of Waltham and Star of Waltham. From his description they must be worthy sisters of that Beauty of Waltham, whom we all admire, and will make a trio to vie with the Three Graces, not in cricket, but in contour. While I heartily wish the raiser this success, admiring his enterprise, and highly appreciating the benefits which he has conferred upon horticulture, not only as to Roses and Pælagoniums, but as concerns those beautiful ornamental trees, which are so striking in our landscapes, but have been so sadly neglected, I must, at the same time, expostulate with Mr. W. Paul upon statements which he has published, and which have been repeated by his son, to the prejudice of his brethren who grow Roses for sale, to the effect that Rose trees sent out by nurserymen who exhibit are weakened and exhausted by excessive growth, and will fail in consequence to please the purchaser. I not only dispute, but I deny, these statements. I affirm from experience, and have proved that which I say, that no better Rose trees can be procured than those which are supplied by Mr. George Paul, of Cheshunt, Mr. Cant, of Colchester, Mr. Cranston, of Hereford, Mr. Turner, of Slough, Mr. Keynes, of Salisbury, and other exhibitors. You may obtain (I am still writing from practical proof) equally good trees from other Rose merchants—such as Messrs. Wood, of Maresfield, Smith, of Worcester, Lane, of Berkhamstead, and fifty others, who do not show—but not better. If you remove fat young cattle from a luxuriant pasture, and turn them into a stubble field, an exposition of ribs will attend this manœuvre; and if you transplant well-grown and well-fed Rose trees from good soil to bad, they will supply entertainment for green fly, mildew, and fungus, but not for you. So long as the wood is ripened (and this depends not on the seller but on the sun), the more there is of it the better, and to assert that, because show Roses have been cut from it, therefore all future flowers will be failures, is about as accurate as to suggest that those pullets which have taken prizes at the poultry show, are thenceforth incapacitated from laying eggs! I am hopeful that our French friends have sent us this year some good new Roses, but they indulge, as I have said, in such rhapsodies and ecstasies over their new born babes, that you can no more accept their estimates than I could endorse the valuation of two mothers whom I once heard appraising a baby, which one of them held in her arms—"Bless its little 'art," said the mother, "its worth a million a minit," and her companion promptly and earnestly responded, "Aye, tu." We feel inclined to apply to our southern brethren the Horatian precept,

Segnius irritant animos demissa per aures
Quam quæ sunt oculis subjecta fidelibus.

i.e., to translate freely, "We're much obliged to you for your descriptive catalogues, but we should prefer a peep at the Roses." With these fond papas a squint is, as Charles Matthews terms it, a "pleasing obliquity"—warts are beauty-spots, and red hair a warm chesnut. I have bought, notwithstanding, and advise others to buy, Captain Christy, which carries the name of one earnest rosarian, and the praise of another, Mr. George Paul, who first saw and admired it at Lyons. It is sent out by Lacharme, and is of the Eugénie Verdier type. Etienne Dupuy, I selected, partly from Levet's recommendation, partly from a sentimental association, weak and illogical I must allow, with the Etienne Levet, which has proved so precious. Jamain's Madame Bernutz has been well spoken of; and I have heard from all who have seen, that Madame Louise Leveque is a real

acquisition, and probably the best Rose of its year. It is raised from Jules Margottin, by Leveque; and the fact that it bears his surname is much in its favour. It has been pronounced to be a strong-growing Madame Furtado, and that sounds in my ears to be the description of a perfect Rose. Madame Marie Finger, raised by Rambaud, but sent out by Lacharme, obtained a first-class certificate at the Lyons Exhibition, June 19, 1873, and must, therefore, be a desirable Rose; and Madame Marguerite Jamain (like Madame Louise Leveque) would not have been honoured with the parental name if it were not seen to add new lustre to it. Miller Hayes I have annexed, not only because Eugène Verdier extols it, but because I have heard from others also that it is a worthy son of its father, Charles Lefebvre. I only hope that Pauline Talabot may justify the comparison with Dupuy Jamain, which has been made by a champion connoisseur, for I have had no more beautiful Rose in my garden (except La France, which, all through this season has here held pre-eminence) this autumn than Dupuy Jamain. I have only to add Thomas Mills, which I believe to be a first-rate Rose; but I have a presentiment that next summer will reveal to us other acquisitions, which are not included in my list, among the Roses of 1874.

SWEET-SCENTED PLANTS AND FLOWERS FOR WINTER DECORATION.

WHERE plants are grown largely for indoor decoration fragrant shrubs and flowers are generally in great demand, especially in winter, and amongst those most useful at that season is the common *Heliotrope*, cuttings of which, struck in the spring and grown on liberally in a pit or frame, fully exposed to light and air during summer, make robust and bushy little plants by the following winter, and flower freely if placed in a sunny position indoors. It is almost needless to state that such cuttings should be pinched once or twice during the earlier stages of their growth. *Mignonette*, too, as everybody knows, is invaluable during winter, and should be largely grown either for use in pots or in the shape of cut bloom. With many it does not succeed; but growers of it for the London market manage it simply enough. Their practice is to sow it in July in 48-sized pots filled with light, rich, sandy soil, thinning out the seedlings to four or five in each pot, and to grow them on in turf pits or canvas-covered frames as recommended for *Heliotropes*. The frames are only covered during very wet or hot sunny weather. The seedlings are stopped once, an operation which causes them to grow dwarf and bushy; and, if they show any inclination to flower too early the buds are removed. Thousands of plants of *Mignonette* are brought into Covent Garden Market every year treated in this manner, and all of them meet with a ready sale. Late *Mignonette* for cutting may be obtained by sowing seed in July on a warm south border, in a sheltered position, such as may be found in front of Vineries and plant-stoves, where it may remain until it flowers. I saw a fine row of it in full flower on the 3rd inst., and if the weather keeps favourable, flowering spikes may be cut from it up to Christmas. The large flowered *Jasmine* (*Jasminum grandiflorum*), one of the most deliciously fragrant of all winter-flowering shrubs, may be grown for winter use in pots (a plan adopted by Mr. Barron, at Chiswick), or, if cut flowers in quantity only are required, it is best to plant out a few strong specimens of it, and to train them along the back wall of a sunny stove or warm greenhouse. Mr. Wills, who employs it largely in the composition of choice bouquets, plants it out and trains it up the rafters of a warm plant-house, having a southern aspect, a position in which it succeeds well and flowers freely. Tea Roses, which are universal favourites, flower best when planted out in strong rich loamy compost, and when trained up rafters or pillars in a warm sunny greenhouse or conservatory. Market growers plant them out in little partly-sunk span-roofed structures, and train them over the roof; thus treated, and pruned in rather closely early in autumn, a plentiful crop of buds and flowers is obtained throughout the winter and spring. During the growth of Tea Roses, the syringe must be freely used to keep down green fly, and a few sprinklings of sulphur on the pipes will be found to check attacks of red spider.

Gardenias are universal favourites, and their culture is by no means difficult, all they require being plenty of heat and moisture, and abundance of light. Many object to grow Gardenias on account of their being almost invariably infested with mealy bug or scale; where, however, a large demand for their flowers exists, it is an excellent plan to devote a small heated span-roof house to their culture, and to train *Stephanotis* over the roof. Sponging, syringing, and a liberal use of insecticides will keep down insect pests; and the flowers of both Gardenias and *Stephanotis* are unsurpassed for purity and sweetness. Many market gardeners plant out their Gardenias in beds of loam and peat, while others grow them in pots. They do equally well either way, and the immense number of flowers which can be cut from a small house containing a dozen or two large plants of Gardenias is astonishing. Mr. Denning, gardener to Lord Londesborough, at Norbiton, who has a small house devoted to large plants of the double-blossomed variety of Florida, is now cutting blooms at the rate of 200 a week, with a prospect of even obtaining more from the same plants as the winter season advances. One of the best points about the Gardenia is that its flowers open one or two at a time, and a succession is thus obtained. Another fragrant plant not nearly so often met with in cultivation as it deserves to be, is the double-flowered *Tabernaemontana coronaria*. By some this is liked even better than the Gardenia, and it succeeds perfectly under precisely the same treatment. Its flowers are smaller and better shaped than those of *Gardenia Florida*, and the segments are beautifully crisped. A few plants of *G. citriodora* should be grown for the sake of its sweetly-perfumed orange-like blossoms, which are borne freely in the axils of the leaves on old plants. Among Violets, which are everybody's favourites, the best for general culture are the double and single Neapolitan. These may be readily propagated by means of offsets, or cuttings taken off in March and grown on liberally through the summer in pots. Many fail with Violets through neglecting them in dry weather. The single variety does well planted out on a mild hot-bed in a sunny frame—a position from which fine crops of flowers may be obtained; care must, however, be taken not to over-water, and they require covering up during cold frosty nights. A few plants of what is called the Lemon-scented *Verbena* (*Aloysia citriodora*) will be found useful; as will also *Myrtles*, both small and large-leaved. The Stag's-horn and Lemon-scented *Pelargoniums* are invaluable for winter use, and deserve to be grown in quantity. Tree Carnations and *Cyclamens* are likewise well worth attention; the latter are admirable for furnishing, and the Carnations yield the best of all flowers for bouquets and button-holes. B.

The Chanterelles.—A pretty group of Fungi, and readily recognised, are the Chanterelles. About a dozen are natives of our island. Three of these we have commonly in our woods at Hovingham, the edible Chanterelle (*Cantharellus cibarius*), the false Chanterelle (*C. aurantiacus*), and the trumpet Chanterelle (*C. tubæformis*). This group differs from the Agarics proper in being furnished with prominent veins on the underside of the pileus, instead of gills. These veins frequently anastomose, and they contain the spores of reproduction. Smaller intermediate veins may be noticed on the Hymenophore. The true Chanterelle is readily distinguished from the false by its aspect. The cap in the true is fleshy, and of a bright yellow, and the stem solid, whereas in the false Chanterelle the cap is thinner and downy, and the stem becomes hollow with age. Moreover, the fine Apricot-like smell of the eatable Chanterelle is sufficient evidence of its identity. Both grow with us under Oaks, but a mere glance is enough to distinguish the true from the false and unwholesome species. The Trumpet Chanterelle is greyish-black in colour. The normal form is like a Cornucopia, but we have in this country an aberrant kind, often met with, in which the pileus is simply umbilicate. It is named *lutescens*, and the two often grow together. The last named species may be found even in November, on mossy banks in woods, and is, doubtless, often passed by as an Agaric, probably an *Omphalia*.—PETER INCHBALD, Hovingham Lodge, York.

Plant Evaporation.—So great is the evaporation of water from plants, as stated by Mr. Lawes, that a plant of Barley of 172 days growth, in which it had acquired 419 grains of dry organic matter and 46 grains of dry mineral matter, had converted into vapour not less than 17 pounds of water.

NOTES OF THE WEEK.

— DR. WOODMAN writes to us from Exeter to say that the common Aspen (*Populus tremula*) is becoming scarce. He has endeavoured to obtain it from several of our principal nurserymen, but without success.

— BOTANISTS will be pleased to learn that the plants of Gay's Herbarium, presented to the national collection at Kew by Dr. Hooker, are now nearly all incorporated and available for use. This collection is extremely rich in European species.

— MR. THOMAS HOGG, writing from Japan to his brother, states that he has found there a new shrubby *Spiraea* with long racemes of white fragrant flowers, which, in his opinion, will be a decided acquisition to our list of hardy shrubs. He had thus far found but one plant, though he entertained the hope of finding others, or of obtaining seeds.

— ONE of our Swedish contemporaries states that the centenary of the introduction of Potatoes into Europe is approaching. It was towards the close of 1774 that Parmentier first succeeded in producing home-grown roots in France. It seems characteristic of the madness for festivals that just now distinguishes the northern races of Europe, that our Swedish friend suggests the propriety of getting up a great Potato Jubilee, more especially as the introduction of Potatoes into Europe is generally attributed to Sir Walter Raleigh.

— LORD NAPIER's report on military gardening in India states that the regimental gardens in many cases satisfactorily answer the purposes for which they were instituted, and that they not only supply very considerable quantities of vegetables to the commissariat for issue to the troops, but also serve as a pleasant lounge for the men and their families. The largely-increased number of men who now occupy themselves in gardening affords satisfactory evidence of the great interest which has been taken in company gardens during the past year. The only drawback to the success of the garden has been bad seed, but that is to be more carefully looked to.

— At a late meeting of the Scientific Committee of the Royal Horticultural Society, Dr. Gilbert contributed, on the part of Mr. Lawes, a note on the occurrence of Fungi in the various plots devoted to experiments with different manures on permanent meadow-land at Rothamstead. The general conclusion appeared to be that Fungi flourished best where the development of Grasses was the least, and where the limited growth of these was due to a deficient supply for their requirements of nitrogen or of potash, or of both. The dry substance of Fungi appears to consist of from one-quarter to one-third of albuminoids, yet, as in the case of the highly nitrogenous leguminous crops, direct nitrogenous manures, such as ammonia salts or sodium nitrate, do not seem to be specially favourable to their growth. The dry substance of Fungi contains eight to ten per cent. of ash, of which eighty per cent. is potassium phosphate. Yet the greatest development of Fungi was on plots on which, measured by the requirements of Grasses, potash was relatively deficient. Dr. Voelcker stated that fairy rings occurred on poor pastures, and that the best mode of extirpating them consisted in the application of nitrogenous manures. Mr. Renny thought that rank-growing Grass was not nearly so favourable for the growth of Fungi as old pasture or common.

— We are pleased to find that Mr. Cutler's long and faithful services, in the capacity of secretary to the Gardeners' Royal Benevolent Institution, are about to receive substantial recognition in the shape of a testimonial. When Mr. Cutler first joined the institution, thirty-two years ago, there were only two pensioners on the list, and the annual subscriptions were extremely limited in amount. By his indefatigable exertions the institution has been brought into its present prosperous condition, the annual subscriptions now amounting to the sum of £750, and the number of pensioners having been gradually increased to sixty-eight. In addition to this very large measure of relief afforded by the important increase in the annual subscriptions, Mr. Cutler has been eminently successful in inducing noblemen and gentlemen of influence to take such an interest in the institution that the funded property now amounts to the highly satisfactory sum of £10,000, affording to all the subscribers a sure guarantee that the purposes for which the institution was founded will be faithfully maintained and carried out in their integrity. The successive committees of the institution have always recognised that its advancing prosperity must be mainly attributed to the untiring energy of the secretary. With the view of giving expression in some tangible form to the wide-spread appreciation of these services, it has been determined to present Mr. Cutler with a suitable testimonial, and for the carrying out of this object a committee has been formed, who invite subscriptions from all who are interested in the work of the institution. Any sum not exceeding two guineas (to which the subscription is limited) will be received, it being well understood that the committee desire particularly to obtain as

numerous a body of subscribers as possible. Subscriptions may be paid either to Mr. Burnell, 79, Southwark Street, treasurer of the fund, or to Mr. Taylor (Webber & Co.), Covent Garden Market.

— We have received from Mr. F. C. le Feuvre, Oak Walk, Jersey, a photograph of a remarkable Beurré Clairgeau Pear tree, which is growing against a wall at the Vineries, St. Laurence, Jersey. The tree is 10 feet high and 7 feet wide, and it produced this year thirty-five Pears, which weighed collectively $5\frac{1}{2}$ lbs. The fruit, which is well brought out in the photograph, seems to have been borne at regular distances apart all over the tree.

— FURTHER investigations prove that the submerged forest, discovered in the Orwell, extends three miles down the river. The upper part of the peat-bed is filled with remains of forest trees, while the lower portions abound with aquatic plants, as if the place had once been a marsh. The bed of peat in which the remains are discovered is 7 feet in thickness, beneath which is the soil on which the forest grew, and finally the chalk.

— At a late meeting of the Scottish Arboricultural Society, the chairman gave a brief report of the proceedings of the committee appointed to investigate the influence of trees on rainfall and climate at Carnwath, Lanarkshire. Mr. Buchan explained the situation of the experimental station as a forest of 62 acres, with a knoll in the interior on which the instruments were set, and at a distance of 320 yards a knoll on the outside of the wood, free from trees, on which a similar set of instruments was placed in almost identical positions to those on the interior knoll. The observations were made twice a day, with intelligence, care, and accuracy, and gave as a general result that during the spring and early summer months the air in the inside of woods was warmer and moister than that on the outside, while in the fall of the year it was colder and damper.

— THE groves of Rose trees and the flower farms of Morocco are said by a recent traveller to exceed in extent and value those of Damascus, or even those of the Valley of Mexico. The general climate of the country is very favourable to this kind of culture. Swept alternately by the breezes of the Atlantic and the Mediterranean, and tempered by the snows of the Atlas ranges, the degree of heat in Morocco is much lower than in Algeria; while the soil is exceedingly fertile. To the Date Palm and to Orange and Lemon trees the climate appears to be especially suited, the Dates of Tafilat having been famous even from Roman times. The Orange plantations are of great extent in various parts of the country, while Olives and Almonds are also staples exported in large quantities. Seeing that this fertile land, lying within five days' steam of London, produces so much vegetable wealth under the most barbarous cultivation, it appears extraordinary that European enterprise does not, in such a climate, seek profitable employment for its over-abundant capital, in its application to the development of such vast resources, so close at hand, instead of going so far afield as Australia or America.

— THE following prizes are offered by the Pelargonium Society, and will be competed for at South Kensington on July 21st, 1875:—Class 1. Twelve distinct varieties of Zonal Pelargoniums, "florists' class," in pots of 8 inches in diameter. (Open.) First prize, £8; second, £5.—Class 2. Twelve distinct varieties of Zonal Pelargoniums, "decorative class," in pots of 8 inches in diameter. (Open.) First prize, £8; second, £5.—Class 3. Thirty distinct varieties of Zonal Pelargoniums, "irrespective of class," in pots not exceeding 6 inches in diameter. (Open.) First prize, £6; second, £4. Note. The varieties to be shown in the above classes are to be of the flowering section—not those with variegated leaves.—Class 1, designated "florists' class," is intended to include only those varieties which have finely-shaped flowers, according to the florists' model. Class 2 is intended for profuse-flowering, showy varieties, otherwise known as Hybrid Nosegays.—Class 4. Six ornamental Cape Pelargoniums, dissimilar. (Open.) First prize, £3; second, £2.—Class 5. Best Hybrid Pelargonium, of distinct character. (Open.) First prize, £2; second, £1.—Class 6. Twenty-four Pelargoniums, cut blooms, single trusses, dissimilar. (Open.) First prize, £2; second, £1.—Class 7. Twelve Pelargoniums, cut blooms, single trusses, dissimilar. (Amateurs.) First prize, £2; second, £1. Note.—The judges may in their discretion, and subject to the approval of the committee, award a prize to any exhibit worthy of particular notice, which may not be provided for in the schedule. They may also withhold any of the above prizes if the exhibit be not of sufficient merit.—*Conditions of competition*—It is imperative that every variety exhibited shall have conspicuously appended to it, its own name, together with that of the raiser, such names to be either printed or distinctly written on a card. The "Chiswick standard" to be adopted in regulating the size of the pots—that is, "8-inch pots" measure 8 inches across and 8 inches deep inside, at a point 1 inch below the top edge; 6-inch pots in like manner measure 6 inches deep and 6 inches wide inside, at an inch below the edge.

THE KITCHEN GARDEN.

THE BEST VARIETIES OF CELERY.

AN admirable opportunity for observing and comparing the growth and character of different kinds of Celeries was afforded the other day at South Kensington, where prizes offered for the best three sticks of any white kind, and the same number of any red kind, brought together thirty lots, in which there was considerable variety. From Messrs. Veitch & Sons came a large collection of excellent examples, and from the Society's gardens forty-five so-called kinds were exhibited, but the differences between many of them were indeed minute. Celeries differ materially in colour, in habit of growth, in solidity—both of leaf-stalk and of the entire plant—in flavour and crispness of eating, and, finally, though not least, in good keeping qualities; the latter consisting of capacity to resist wet and frost and lateness in starting to seed. As a rule the red Celeries are thought to possess these latter qualities to a larger extent than white sorts, but that is not the case with all red kinds. Some prefer the flavour of coloured Celeries, while others like the colour of the red kinds, which, when blanched, are usually of a delicate pink hue, and, when neatly garnished with fresh green Parsley, they have a pleasing appearance on the dinner-table. White Celeries are usually considered to be the earliest; and are, therefore, invariably grown for the first crop. Some kinds are undoubtedly earlier than others, but much more depends on the period at which the seed is sown and the after culture, than on the early qualities of any particular variety. Probably there are no vegetables of which fewer sorts are grown in any one garden than Celery; a couple of kinds, one good white and one good red, generally being enough; but it is a matter of no little moment to be certain that these sorts are really good, solid, crisp, and well flavoured. It may be accepted, as a rule without exception, that any kind which, when liberally grown, has firm and solid leaf-stalks, will be certain to be crisp and of good flavour. In hollow-stemmed sorts the leaf-stalks are flat and oftentimes split; with good solid kinds the stems have a rounded shape, and each stalk overlaps and seems to grip the one beneath as in a vice. When blanched, the plants come out clean and sound, and invariably look well. Much, however, depends upon habit of growth, as some kinds are spreading, whilst others are upright, the centre of the plant being well protected. Celeries that have a sprawling habit of growth never turn out good; but upright growing kinds usually do. Moreover, they are easier to handle in earthing up, and it is only those who perform this operation who can fully understand the difference between the two habits of growth, as upon the manner in which earthing up is performed depends much of the after value of the crop. Earthing up should always be done on dry days, and gradually, special care being taken that only well pulverised soil is permitted to come in immediate contact with the plant, and this should be carefully pressed around it with the hand before the final earthing up is given, as, the firmer the soil the less will be the moisture around the plant. With the ordinary routine of Celery cultivation, however, most persons are familiar. Seed should be sown in March, in shallow pans or boxes, and placed in a gentle heat. When the young seedlings are 3 inches in height, they should be pricked out into other boxes filled with rich soil, or into a frame, the soil of which contains a large proportion of well-rotted manure, and these, again, when about 6 inches in height and strong, should be transplanted carefully, with good balls, to permanent quarters in properly prepared trenches. It is a rather too common practice to make the trenches so deep that the plants are compelled to grow in the sub-soil. The trenches should be marked out 5 feet apart; the top spit should be put on one side, and a spit of the sub-soil taken out and put on the other; the top spit should then be returned to the trench, and with it not less than 4 inches of strong rotten manure, which should be well incorporated with the soil with a fork. If this is carefully done before planting much more satisfactory results will be obtained than if the sub-soil were allowed to remain on the trench. The after-culture should consist of liberal waterings, and, as the plants increase in size, an occasional soaking

with manure-water might be given, but it is possible to produce a too-luxuriant growth at the expense of quality. Gradual and careful earthing up completes the process of cultivation. From the large number of Celeries grown at Chiswick it would be extremely difficult to make a selection of the best kinds without the possession before-hand of some knowledge of them. In the case of the sorts shown for competition the judges cut each stick through with a knife, and thus their qualities were at once apparent. The Chiswick collection was not thus operated upon, and, therefore, in looking over the different kinds, one had to judge more by feeling and appearance than by any other tests. Among red kinds none equalled for colour and compactness of growth the Leicester Red—a kind that is identical with Major Clarke's Red, and is probably the most compact of the coloured kinds. Very fine and firm were the samples of Sulham Prize Pink, and Carter's Incomparable Crimson, both distinct kinds, tall in growth and robust in habit. Another good-looking kind was the Manchester Red, of which there were several synonyms. Among whites the best and only true dwarf kind was the dwarf Incomparable White, commonly known also as Sandringham White. This is compact, firm, crisp, and keeps well. Next in height and quality came Veitch's Silver White, a good firm variety; the best of the tall kinds being Wright's White Grove and Seymour's Solid White. It is well worthy of note, that in the competition for Red Celeries the shortest Leicester Red was placed first, and that amongst whites the dwarfiest, namely, Sandringham White, was both first and second. A. D.

French Beans.—Is there more than one French Bean called Canadian Wonder? Mr. Gilbert (p. 385), strongly recommends this kind for forcing in pots (I expect that is the general way in which French Beans are forced), and after reading his description of it I was induced to try it in a frame on a bed of leaves, a way in which I have grown early crops for years; not having convenience for pots, I either sow in the frame or transplant from a pan early in March. The Canadian Wonder was planted in the frame and grew robustly, but bore no crop, or at least next to none. I therefore, concluded, that it was too strong a grower for frame work; but not being quite satisfied on that, and other points, I decided to try it on an open border, where it did better, but the produce was not comparable either as regards quantity or quality, with that of Paris Red Flageolet, planted at the same time side by side, and which really is a first-class Bean, but different altogether from Canadian Wonder, both in habit and size of pod. Nevertheless, in this week's number of THE GARDEN (see p. 462), your correspondent, T. Baines, has described the two sorts as one and the same Bean; he cannot however, I think, have grown both varieties, as with me they are wholly different kinds. I have grown Paris Red Flageolet now for some years and hope never to be without it, as it certainly is the best main crop kind with which I am acquainted, especially where plenty of produce is wanted. I gathered the last dish of it on the 11th inst., after 8° of frost, but it was protected with double hexagon netting. The plants which yielded this gathering were sown on the 28th of July, on a south border. The best Bean for an early crop I have found to be Sir J. Paxton, a kind which forces well, and with which I have several times taken the first prize at our June exhibition; but this year, owing to trying Canadian Wonder instead, I had none to show. I shall certainly not try the latter again.—W. DIVERS, *Wierton House, Maidstone*. [Your correspondent, who has sent samples of two varieties of French Beans, under the names of Paris Red Flageolet and Canadian Wonder (which are identical), has not got the Flageolet Bean at all, those sent being as different from that variety as the dwarf Negro is from Dan China. I enclose a sample of the Paris Red Flageolet, which I have cultivated for years, and which I grew side by side with the Canadian Wonder. The year during which the latter came out I, as well as numbers of others, proved it to be one and the same thing as Flageolet. As you will see, the true variety is as large again as your correspondent's Bean, different in colour, and quite unlike it in shape. The full-grown Beans, and also the pods of the true Flageolet, are nearly as large as Scarlet Runners.—T. BAINES.]

Major Clarke's Red Celery.—Until this season I have had great difficulty in obtaining really good Celery, although I have tried several varieties, and have grown them to a large size. This season I have one long row of Major Clarke's growing side by side with others, but none of them are so good as Clarke's. It is solid, crisp, and exquisite in flavour, an opinion which all who try it will confirm. It is the only variety which I shall grow next season.—D. S. GILBERT, *Court Garden, Great Marlow*.

THE FRUIT GARDEN.

THE GRAPE VINE.

THE Grape Vine (*Vitis vinifera*) deservedly occupies the place of honour in the catalogue of fruits. It ranks in importance next to Wheat, and, like the latter, has been the companion of civilisation from time immemorial—following in its wake to every region of the earth adapted to its growth, and forming one of the most important branches of husbandry in those countries favourable to its development. Its native country has never been clearly ascertained, but it has evidently been widely distributed at a very early period. It is supposed to have come originally from Persia, migrating westward through Egypt to Greece, where it was cultivated by the highly civilised Greeks with intelligence and skill, we are told, from the days of Homer to the latest date of their prosperity. They appear even to have been experts in Grape growing, and fond of experiment, though not free from superstition in some of their practices. Among other feats which they are said to have performed was one which has lately been revived as a secret. This was to produce black and white Grapes on the same cluster, and which they accomplished “by taking a slip of the white and of the purple Grape, and, having split them down the middle, carefully fitting the halves to their opposites so that the buds when divided should meet. They were then bound together with Papyrus-thread, and placed in the earth in a Sea Onion, the juice of which aided the combination of the severed parts.” They seem also to have been quite as particular as our modern Grape-growers in the selection of sites for their Vineyards, and in preparing the ground, which they trenched over, throwing the soil into lofty ridges and exposing it to the action of the air, and in this condition it was left for a whole year before planting. Then as now, too, opinions were divided concerning the best season for planting, some preferring to plant in spring, and others in autumn. From Greece, the Grape found its way into Italy, Spain, and France, its distribution being aided by the Romans in their

conquests westward, and its culture, as a branch of husbandry, rose in the course of time to be of national importance in these countries. It is supposed to have been introduced into Britain by the Romans about the second century, while others imagine it to have been imported much earlier, but not to have been cultivated until the civilising Romans set the example. About the third century, Vineyards were planted in the most favourable parts of the country, and, as civilisation progressed, these became more common, and were cultivated more or less successfully for the production of wine and other purposes up till, or near the time of, the Reformation. The Vine does not appear, however, to have flourished so successfully in our island as to encourage its extensive cultivation, and, as the superior wines of the Continent came to be imported in greater abundance, its outdoor culture gradually declined, until it became a thing of the past. But, as the Grape declined in value for wine-making purposes, it rose in estimation as a dessert fruit, and was more universally grown. At first, according to early writers on horticulture, Grapes for the table were grown upon standards

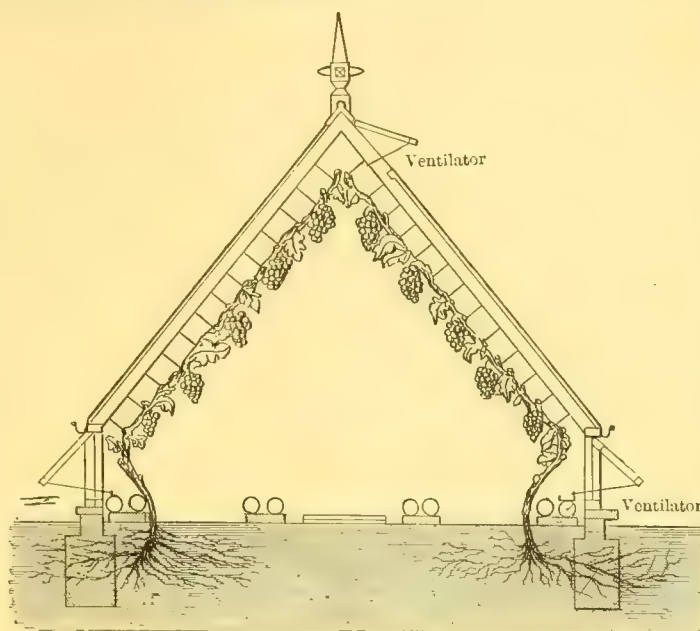


Fig. 1. Section of a Span-roofed Late Vinery.

in warm situations, and against walls. Gradually, as the demand increased with increasing wealth and a more luxuriant mode of living, Grape walls came to be heated with flues, in

order to ripen the fruit earlier, and so extend the season of supply. More than 150 years ago, it was stated by Lawrence, in his “Fruit Gardener,” that the Duke of Rutland, at Belvoir Castle, did “so much justice to the Vine as to have fires constantly burning behind his sloped walls from Lady-day to Michaelmas,” whereby he had ripe Grapes in July. Eventually, flued walls were covered with glass, and, towards the end of the eighteenth century, Vineries constructed in a complete and proper manner (for the period) were becoming common in the gardens of the aristocracy; but it was reserved for the

nineteenth century, especially since the abolition of duty upon glass, to witness the great and rapid extension of horticulture in every department, and notably in the culture of the Vine; so that now the Vinery is the common adjunct of every mansion and villa of any pretensions, and not unfrequently

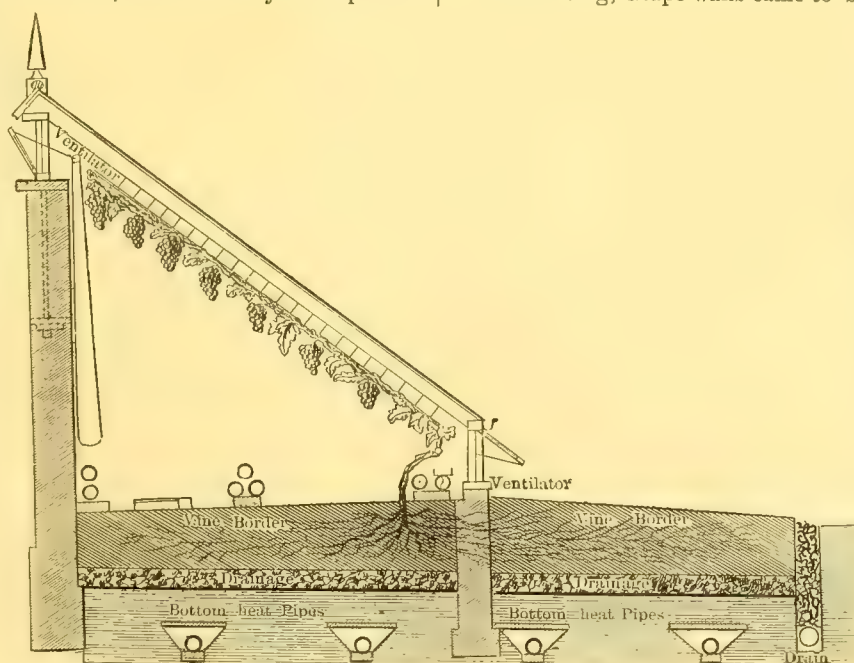


Fig. 2. Section of a Lean-to Early Vinery.

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of the poor man's cottage; and the Grapes produced under our sunless skies are, thanks to the energy of English gardeners, hardly excelled in any part of the world. Having thus sketched briefly the history of the Grape down to our own time, I now proceed to cultural matters.

Site and Plan of Vinery.

The site should present facilities for effectual drainage of the soil and sub-soil, if required, and it should have a free and open exposure to the south, east, and west—more especially if span-roofed structures are to be erected—while at the same time shelter from prevailing winds must not be forgotten. But sheltering objects, such as trees or high buildings, should be distant enough to prevent any bad effects from their shade. Nothing is more injurious to Vines than shade, not to speak of the additional cost in the way of fuel that would be incurred by having to keep fires burning longer morning and afternoon. As far as practicable, a Vinery should receive the sun's rays from sunrise to sunset. The form of the Vinery must depend upon circumstances. If it is for the production of ripe Grapes any time between the New Year and Midsummer, then a "lean-to" is the best for that purpose. Experience has long proved that such a structure is better adapted than any other to receive and economise the heat and light of the sun during the winter and spring months. For late Grapes—that is, Grapes that have to be ripened between midsummer and the end of September or October—a span-roofed house (fig. 1) is the best. It should stand with its ends facing north and south, in which position it receives the light most equally. Fig. 2 is a section of an early Vinery of the right size and proportions. We have another form of late Vinery here which was erected about fifteen years ago, after the plan of the glass screens at Trentham, but made wider. It is a kind of structure adapted to the wants of the amateur, and those who have to grow plants in the same house. In such a case it is proposed to train the Vines on the top only, under the ridges, where the fruit would at all times be out of danger, while the sides would admit sufficient light for the other inmates of the house upon the floor. The house here is entirely devoted to Vines, which are trained up the sides as well, and the crops have always been excellent. As showing the advantages of a good exposure to the light, I may here mention that in this house the fruit always ripens a fortnight earlier under the ridges than that at the sides. The leaves also are of greater substance, and the wood better ripened. This is owing to the greater amount of sunlight which the Vines receive. The ridges stand above the top of the wall against which the house is built, and receive the sun's rays several hours longer than the sides every day. Camellias, Oranges, and such like, would do well in a house of this kind, and against the front lights Strawberries in pots succeed admirably in spring.

Construction and Heating.

The best plan, in most cases, is to employ a professional horticultural builder and engineer to carry out the plans according to order. I need only observe here that wide and lofty houses produce the best results, because they allow of a greater extension of wood and foliage, and can be maintained at a more even temperature, owing to the greater bulk of air which they contain. In a "lean-to," the back wall should be plastered and whitewashed. Lightness and elegance should be aimed at in the construction of the roof, and no more wood or iron should be employed than is consistent with strength and durability. The wires for training the Vines, too, should be stretched along the house 9 inches apart, and 18 or 20 inches from the glass. When nearer than this, vigorous-growing Vines send their shoots up against the glass before it is safe to tie them down, and get chilled by the contact. Heating power, in these days of wide panes and open laps, should be provided on a liberal scale. In fig. 2, which represents a Vinery 16 feet wide by 16 feet in height, I have shown seven rows of 4-inch piping—the least quantity that should be employed for an early Vinery of these dimensions. In localities subject to severe and lasting frosts during the forcing season, I should be inclined to add another single row, so as to be able, when needful, to keep the temperature of the house 50° or 60° above the outdoor temperature, without making the pipes

too hot, and thereby scorching up everything in their immediate neighbourhood to a dangerous extent. The pipes should also be arranged so as to distribute their heat equally throughout the house, and keep the air in motion. In the majority of cases, they are carried round the front or sides of the house, in a block; consequently, when they are heated, the Vines are scorched at the lower part of the house, while they are suffering from cold at the top. I am aware that those who advocate this arrangement suppose quite the contrary to be the case, but a little reflection will show such a supposition to be erroneous. In a lean-to Vinery, for example, where the pipes are placed close to the front wall, a current of heated air ascends in a direct line from the pipes, and, coming in contact with the cold glass roof before it has travelled more than a few feet, it at once loses a great part of its heat by conduction, and, before it reaches the apex of the roof, its temperature is still more sensibly diminished, and, escaping by crevices or the ventilators, is lost. This is what takes place in a Vinery at night, or at any time when the temperature depends solely upon fire heat, and it explains why the Grapes under such circumstances invariably ripen above the pipes first, and finish off, sometimes, a month later at the top of the rafters. Anyone may satisfy himself on this point by placing a thermometer at the top and bottom of the house when the pipes are heated, and noting the difference. All this, however, is overcome by arranging the pipes as shown in figs. 1 and 2. I have had all the pipes in the Vineries here re-arranged on this plan, with the best results. It is difficult to lay down a rule for ascertaining the exact quantity of pipes required in every case, so much depends upon circumstances and the materials used in construction; but I find, for early Vineries, that 1 foot of 4-inch piping to every 18 or 20 cubic feet of air is generally sufficient for the temperatures which will be hereafter recommended for the Vine. Considerably less piping is required for late Vineries. To keep the atmosphere of the Vinery in a proper state of humidity, I find no plan better than liberally sprinkling the paths and inside borders with water. The Vine is not a plant that delights in a steaming atmosphere. Still, when hard firing is necessary, a more steady means of supplying moisture is desirable, and for this purpose I can suggest nothing better than the usual evaporating troughs, which may either be cast on the pipes, or made of galvanised iron and fitted on. These troughs are less troublesome than flowing gutters communicating with the boilers, as the latter are generally either running over upon the roots of the Vines, or requiring to be filled up as the water in the pipes rises or falls, according to its temperature.

Ventilation.

It is necessary, especially in the case of early Vineries, which are generally going to rest about midsummer and requiring to be kept as cool as possible, that the ventilation should be ample. The usual and most simple plan is to provide openings at the highest and lowest points of the roof. These openings, which should in the aggregate be equal to about a quarter of the area of the roof, including the front sashes, are fitted with swing sashes, which open with a rod and lever, as shown in figs. 1 and 2, so that the ventilation can be regulated as desired. This plan is found safe and effectual enough in ordinarily careful hands, and airing is at all times chiefly a question of attention and judgment; but it has the disadvantage in early forcing, that no sooner are the front lights opened than a current of cold air rushes into the house and comes in contact with the tender foliage before it is more than partially warmed, thereby injuring the Vines in the long run, producing rust and other evils. The obvious remedy for this would, of course, be to heat the air before it entered the house, and some ingenious and successful contrivances have been adopted to effect this object; but they add so greatly to the already much-increased cost of heating, &c., as to be practically out of the reach of all but those to whom expense is no object. The annexed sketch, fig. 3, shows a simple plan of accomplishing the end in view, which I have tried when necessary with perfect success, and it is so inexpensive as to come within the reach of every amateur, however humble. A is the front row of hot-water pipes inside the front wall of the Vinery; B a row of earthenware pipes, joined with cement,

laid directly under them, and having a row of holes each $\frac{1}{2}$ inch in diameter and 3 inches apart on their upper side; C is the feed pipe, which projects through the front wall into the open air, and at which the cold air enters, and, traversing the earthenware pipes right and left, comes out at the holes at the top, and, passing round both sides of the hot-water pipe, in its ascent gets thoroughly warmed before reaching the Vines. A still more simple plan is to project a single pipe through the front wall to the front row of hot-water pipes, taking care that the mouth of the pipe is just under the hot-water one. This will admit a stream of warm air, and, if the pipes are placed about 4 feet apart, the ventilation will be ample. The outer ends of the pipes must be fitted with plugs for shutting off the air at

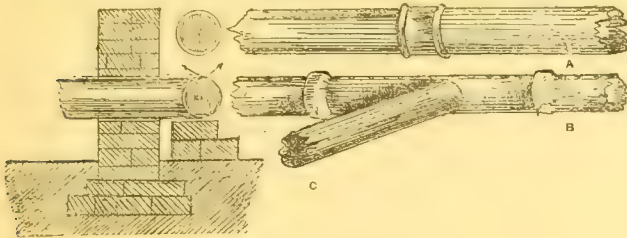


Fig. 3. Ventilating Pipes.

pleasure; and, if a piece of wire netting or perforated zinc is fitted into the mouth of each pipe, it will stop rats or mice from getting in.

J. S.

(To be continued.)

PEAR NOMENCLATURE.

SOLDAT D'ESPEREN, Soldat Labourer, Orpheline d'Enghien, Beurré d'Aremberg, Glou Morceau, Beurré d'Hardenpont, and Colmar d'Hiver! Here we have seven names, but who will undertake to say exactly to what sort they each respectively belong? Pears are proverbially capricious as regards both the season of their ripening and the quality of their flavour; but it seems that caprice attends even the choice of the names under which they are presented to the public. And this is not owing to the number of their synonyms, but to the fact that a Pear tree is often sold under a name that belongs to another sort. Taking M. Jamin's list of "Pears worth growing" given in THE GARDEN for November 15th, I would enquire whether the Pear which he has called Soldat Labourer is not the same that is usually sent out under the name of Soldat d'Esperen? From the period he gives of its ripening I should think that it must be. Soldat Labourer I have always identified with Orpheline d'Enghien, and I was surprised to find M. Jamin making Orpheline d'Enghien and Beurré d'Aremberg synonymous, having myself always regarded them as two distinct sorts, though greatly resembling each other. Our Soldat d'Esperen, like M. Jamin's Soldat Labourer, ripened here three weeks ago, whereas the Orpheline and the Aremberg are still hard, and are seldom fit to eat till after Christmas. That there are two Pears bearing respectively these names, Orpheline d'Enghien and Beurré d'Aremberg, the fruit catalogues of Mr. Rivers (no mean authority on Pears) will show. I was aware that in the published transactions of the Horticultural Society mention was made of the introduction of the Beurré d'Aremberg; and, on referring to the fifth volume, I found a description of it at page 406. There is another account at page 198 of the seventh volume, and a reference to the fact that there was at that time another Pear, the Glou Morceau, which had been sent to England as the Beurré d'Aremberg. On the opposite page there are beautifully-executed portraits of each, and no one, on looking at them, could for a moment mistake the one for the other. But I looked in vain among the synonyms of the Beurré d'Aremberg for Orpheline d'Enghien, the only other names being Duc d'Aremberg, Poir d'Aremberg, and Beurré Deshamps. The confounding of this Pear with the Glou Morceau ceased, we may suppose, when the Horticultural Society settled the matter in 1826; but M. Jamin has given us another point to investigate; his list includes the last two of the seven names given above, namely, the Beurré d'Hardenpont, and the Colmar d'Hiver, to each of which he gives as synonyms the Glou Morceau. These two names occur in the list of the forty-six "Pears worth growing;" and those who possess the Glou Morceau of the Horticultural Society, and know it by no other name, would probably like to be informed by M. Jamin whether it is identical with either of those, and, if so, with which? For we can hardly suppose that a Glou Morceau, when trained to a

south or west wall should be called a Colmar d'Hiver, or that it becomes a Beurré d'Hardenpont when grown upon an east or south wall, the situations recommended by M. Jamin. At present my seven names appear to be represented by four Pears only; but I should be glad to be better informed on the subject, and to be quite sure of what the addition to my stock of Pear trees would really be if I sent for either the Colmar d'Hiver or the Beurré d'Hardenpont. Synonyms, when they are known to belong to one fruit only, do not occasion disappointment. Whether we order it under the name of Dumelow's Seedling, or under that of Wellington or Normanton Wonder (it is known by the latter name in this locality), we know that we shall get the Apple we require; but confusion appears to have attended the names of Pears, especially of those which came to us in the early part of the present century. What is the Beurré Spence for example, is it identical with the Urbaniste as some say, or is it, as M. Jamin tells us, a name that was formerly given to the Flemish Beauty; or, again, is there a third Pear of that name? In the naming of fruits, some confusion may have been occasioned by the different names given them by foreigners and by ourselves; the Jargonelle of the French, for example, is an inferior Pear to our Jargonelle, for which they have a different name, and to the Chasselas de Fontainebleau Grape we have given, as every one knows, the name of the Royal Muscadine. To such changes of name may, perhaps, be traced the uncertainty which belongs to the names of some even of our favourite Pears, and M. Jamin would be rendering us a service if he would give the subject the attention and research which it evidently requires. I may add, in reference to Apples, that, until lately, Mr. Rivers's catalogue contained one called the Waltham Abbey Seedling or Golden Noble. The history of this fruit may throw some light on the way in which two separate kinds come to bear the same name. At p. 268, Vol. V., of the *Horticultural Society's Transactions*, we read that this Apple was raised at Waltham Abbey about the year 1812, from a seed of the Golden Noble, "to which it bears a strong resemblance, but is much larger." There must, therefore, now be, supposing the parent tree to be only one of many still existing, two Apples called the Golden Noble, though only one known as the Waltham Abbey Seedling. Of the latter I would remark that it is so fine an Apple, so certain and so abundant a bearer, that I think Mr. Rivers would have done well to have retained it in his catalogue.

B. S.

THE CHESTNUT HARVEST IN THE APENNINES.

THERE is festival now in the cottages of North Italy. As you walk at evening among her mountains and pass through her homely villages, a red light of wood fires comes streaming upon you from open cabin doors and from between the chinks of clumsy window-shutters, and noisy sounds of revelry fall around. For this is the season when the Chestnuts are ripe, and the peasants are making merry by dark for the work they have had during the hours of day, and they are glad for that harvest which is to them the most bounteous of the year. High up, among the Chestnut woods, the sad leaves lie damp upon the ground, where the mossy turf is so moist that the Mushrooms are spoiled ere they be grown. The country looks tenderly forlorn that was so gay with its vintage in September. The trees shed their foliage early in Chestnut-wooded districts, and already the tints have little left that is freshly green, since the leaves are yellow upon the boughs, and are scattered, day by day, more thickly to earth. There is no hot sunshine, no blue light that is misty with heat; yet the valleys can still smile in their soberer mood, when chance and glorious sunbeams strike across the land, or when the rain ceases and bright days come back, here and there, with warmer breezes. The swollen rivers abate when the deluge ceases, if only for a day; and as you walk upon their banks the waters are limped again, yet green from their depth with an intenser colour. And wandering beneath the Chestnuts, no sense of damp or dreariness oppresses you now that sunshine is abroad once more, for the yellow-tinted leaves wave brightly overhead, and the yellower ones that are scattered rustle pleasantly beneath your feet, while now and again a quick sound breaks the stillness, and that is the fall of the fruit. Since the middle of October you might have heard it when you were in the woods, for the Chestnuts began to ripen at that time, and the brown-burnished fruit to peep from out its prickly shell. But scarcely before the end of the month in the Apennines does the Chestnut harvest begin in earnest. There is an interesting account of this in the *Examiner*. There are divers kinds of Chestnuts, and the gathering of each dates properly from a different day: the so-called "timely Chestnuts," that ripen before the commoner sorts—but these trees are rarer and the fruit is finer than of others; the late Chestnuts, that of their own accord do not fall sometimes till November—but these trees are often thrashed during the general

harvest for the greater convenience of the gatherers. Companies of women and girls greet you now upon your walks. They have little bags of sackcloth slung around their waists, and rough wooden tweezers in their hands, with which they open the spiked husks where the fruit lies yet in its green case. They are merry; they laugh and talk, their shrill Italian voices sounding shriller to English ears in the harsh Genoese dialect. Here a man has come to the aid of the girls, and has climbed to the top of a huge tree that he may the better thrash down the fruit. It falls in prickly showers upon the crackling dead leaves below; but the women seem little to fear any hurt from thorns, for they tread boldly amid the heap, often with bare feet, and take the harsh shells within their hands to open them. All day the people are at work. They are almost all women at this task, for the men are labouring in the fields. Some few of them return home at midday to cook and to carry the dinner for brothers and husbands without; but most of them remain in the woods till dusk, and eat their cold "polenta" at midday, resting upon the banks. Towards dark, the great baskets are piled up that have been filled all day from each woman's sack, and then the girls lift them upon their heads or shoulders, and pick their way deftly along the stony paths with the burthens. Sometimes the loads are too heavy and must be left for the men; but this does not often happen, for these peasant women are strong, with a beautiful ease of strength, and proud of their power. So, whether the day has been dark and cheerless, or whether the kind autumn sunshine has been there to brighten up all anew into a beauty more beautiful than summer-time, the women have been at work in the woods, and now the recreation hour has come. Within the cottages the great fire is lit upon the hearth that is in the chamber's midst, and the pot is put on to boil, and the rough wooden benches are drawn around, and men and women meet after their labour for fun and jollity at the first of the Chestnuts. When the "minestra" has been eaten or the "polenta," then the pot is taken off, and the great chain is put aside from whence it hung, and the "padella" is brought forth, upon which the Chestnuts are to be roasted. The red wood-fire flickers and flames upon the hearth amid its heap of embers, throwing fitful dashes of light upon the faces around—calling into sudden gleams the copper vessels, and platters upon the dingy walls. Again the bold flames die away, and there is only a lurid mass of cinders, and then the women toss Chestnuts in the pan and the men slit the brown hide of other Chestnuts that are yet unroasted, and they all chatter and gesticulate the while, in a fashion so quick and eager, and with voices so high and thrilling, that foreign ears, to whom the shrill dialect is unknown, might fairly hear therein the words of an angry quarrel. The Chestnut harvest lasts some three weeks or more, and when the fruit is all gathered in it is spread above the open rafters that form the roof of every kitchen in these Italian cottages—there to be dried during winter by the fire's heat from below. And when the Chestnuts are dried, and the outer skin has been cracked off by the heat, then they are ground in a mill, so that the flour goes to make Chestnut bread and cakes and porridge during the barren season when there is little fresh food to be got by the poor. The dried Chestnuts are boiled whole likewise—so that, in one form or another, the common production of the woods provides nourishment during this time for all the peasants throughout the land. This is the Chestnut harvest in the mountains, for in the mountains it is most an institution and an event, seeing that here there cannot always be so lavish in-gatherings of other crops and fruits as fall to the lot of people living upon the sun-baked shores of the Mediterranean. Nevertheless, upon the Riviera as well there is a Chestnut harvest and merry-making thereto. All along the shores from Genoa to Nice and from Genoa eastward, towards La Spezia, the trees grow richly upon the sides and cones of hills that turn inward from the sea or upon promontories above the water, wherever the Palms or the Stone Pines have not monopolised the room. And the soil here is so fertile, with streamlets that water and freshen it, and sun that shines hotly for many months upon its face, that the Chestnuts ripen more quickly and grow larger than upon the hills of the Apennines, so that they can be sold in the towns, and even exported to foreign lands, thus proving a good source of gain to the peasants. The greater luxuriance of the crop does not, however, make the greater quaintness in the manner of celebrating the season; and, to see a Chestnut country in beauty, there is no place like the valleys of the Apennines. Upon the shores there are the great rains as well that come pouring down from the skies to saturate the fields, and hurricanes from the sea that tear the branches from the trees, and cast down the rough little stone walls which divide the lands of different owners; yet there are not so many cosy gatherings of friends and neighbours around kindled logs. The trees do not so early shed their leaves upon the coast as in damper and colder districts, but the deeply golden colouring is over the hill-sides, broken only by the dark relief of Pines and Ilexes.

The Viceregal Gardener on the Lambton Castle Grapes.

—As considerable uncertainty seems still to exist regarding the large bunches of Grapes that were exhibited at the Belfast show on August 20 last, I think it due to Mr. Hunter to communicate the following circumstances. The bunches in question were presented by the Earl of Durham to His Grace the Duke of Abercorn, and brought here immediately after the show. His Grace being desirous to show them to the company at dinner, the bunches were suspended from arches. In suspending them, I had ample opportunity of examining the bunch that has been the subject of discussion, and had there been any attempt at amalgamation, I should certainly have seen it. From the eye from which the bunch started to the point where ramification commenced, there was about 4 inches of true stem, perfectly round, with no sign of flattening throughout the remainder of the bunch. The immense size of the bunch gave the berries a small appearance, but, on comparing them individually with others of moderate dimensions, there was little difference; and, though they were not well coloured, many of the berries had the hammered surface. The eating qualities of the Grapes were very good, the pulp being remarkably firm and sweet. There need be no doubt whatever entertained regarding the bunch in question being one genuine bunch.—G. SMITH, *Viceregal Gardens, Dublin, in Gardeners' Chronicle*. [The above should certainly set the point at rest, though all aware of the many fine bunches grown in the same garden year after year by Mr. Hunter, require no evidence as to the rumours circulated about the "grafting" of the bunch, &c.]

A Selection of the finest Pears proved in England.

Doyenné d'Été	Comte de Lamy	Maréchal de la Cour
Jargonelle	Flemish Beauty	Beurré Superfin
Williams's Bon Chrétien	Désiré Cornelia	Doyenné du Comice
Louise Bonne of Jersey	Marie Louise	Glou Moreau
Jersey Gratioli	Baronne de Mello	Winter Nelis
Urbaniste	Thompson's	Beurré Rance
Fondante d'Automne	Beurré Bosc	Beurré Sterckmans
Beurré d'Amanlis	Duchesse d'Angoulême	Joséphine de Malines
Suffolk Thorn	Beurré Diel	Bergamotte Esperen
Seckel	Beurré Hardy	Easter Beurré

Of the above—

Marie Louise	Glou Moreau	Easter Beurré
Beurré Bosc	Beurré Rance	Beurré Sterckmans
Duchesse d'Angoulême	Joséphine de Malines	Désiré Cornelia, and
Beurré Diel	Bergamotte Esperen	Winter Nelis
Doyenné du Comice		

should be grown against walls.

Choice List for Standards.

Jersey Gratioli	Louise Bonne of Jersey	Doyenné d'Été
Doyenné du Comice	Suffolk Thorn	Comte de Lamy
Citron des Carmes	Thompson's	Knight's Monarch
Jargonelle	Beurré d'Amanlis	Althorpe Crassane
Williams's Bon Chrétien	Swan's Egg	Marie Louise, and
Aston Town	Croft Castle	Beurré Superfin
Beurré de Capiaumont		

It should not be forgotten that Pears trained in any of the closely-cut forms should always be grafted on the Quince stock.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Heavy Crop of Strawberries under Glass.—On visiting Mr. Westcott's market garden at Topsham, the other day, I found thousands of Strawberries in pots under glass in all stages of growth, some being in flower, while others were loaded with ripe fruit, and the crop in all cases was so heavy that liberal thinning had to be resorted to. A handful of shoots removed in my presence literally swarmed with small green fruit. It seems, indeed, that Mr. Westcott can obtain as fine Strawberries, and as many of them, during these short days as in the month of May.—J. B.

New Late Pear.—Among late Pears, few surpass Souvenir de Sannier. Its deep yellow rind, flushed with red, makes it a very ornamental fruit; while its flavour is remarkably fine. It ripens late in October. The Beurré Amande, of the same grower—M. Sannier, of Rouen—a fruit of bright canary-yellow colour, having a distinct flavour of Almonds, does not ripen till the middle of November.—H. N. H.

The White Muscat of Frontignan.—This, supposed to be of Spanish origin, is the fruit (says the *Revue Horticole*) from which the Frontignan and Lurel sweet wines are made, and extensive vineyards of it may be found in the departments of the Pyrenees; but in the central provinces of France it is only grown as one of the sweetest and most highly flavoured Grapes for table use.

To Prevent Fruit Trees from Splitting.—It frequently happens, in very fertile regions, that trees split limb from limb through sheer weight of fruit. We saw many instances of this wherever a small garden had been planted in the foothills of the Sierras in California. The common mode of prevention is to prop up weighty branches with a piece of shingle. Isaac Lewis, of Hopkinsville, Ky., gives, in the *Prairie Farmer* another plan:—"When I find a forked tree that is likely to split, I look for a small limb on each fork, and clean them of leaves and lateral branches for most of their length. I then carefully bring them together and wind them round each other, from one main branch to the other. In twelve months they will have united, and in two years the ends can be cut off. The brace will grow as fast as any other part of the tree, and is a perfect security from splitting. I have them now of all sizes, and I scarcely ever knew one fail to grow."

THE INDOOR GARDEN.

IPOMÆA HORSFALLIÆ AND PASSIFLORA PRINCEPS (RACEMOSA).

WHEREVER winter flowers are in demand, and there is room for stove climbers of moderate growth, these two free-flowering plants should be introduced. To do them justice, however, they should have a little space in which to plant them, bricked off from the main bed or pit, where they will get a little bottom heat. The

ing racemes of the scarlet Passion-flower, or the more erect masses of brilliant tubular flowers of the *Ipomæa*. Unfortunately, like a good many things that are bright and beautiful, the individual flowers do not last long in perfection; but this defect is scarcely noticed, as the flowers succeed each other in such rapid succession through a good portion of the winter. When a moderately warm greenhouse adjoins the stove, branches of the plants just named might be introduced through an aperture, and trained over its roof. Many stove climbers might have their blooming season prolonged in this way, and notably that sweet white-flowered favourite, the *Stephanotis*



A New Gold Fern (*Gymnogramma decomposita*).

space for soil need not be large; from 18 inches to 2 feet square will be sufficient; but the drainage should be perfect, and the soil should be about equal parts of turfy loam and peat, with a liberal sprinkling of sand and lumps of charcoal. The latter will keep the soil open after the fibre in it has become decayed, and when, from frequent waterings, it may have a tendency to get too close. As a rule, heavy masses of climbers overhanging other plants in winter are not desirable, but in a lean-to house there is always the back wall to drape; a few climbers, too, trained thereby under a span-roof will do no harm, and there are few things more beautiful in winter than the long droop-

floribunda, which, provided its roots are placed under favourable circumstances, will ramble on from house to house, trained near the glass, and acquire an almost perpetual flowering habit, according to the varying temperatures to which its branches are subjected.

E. HOBDAV.

A NEW GOLD FERN.

(*GYMNOGRAMMA DECOMPOSITA*.)

THIS is a distinct and beautiful species, well deserving of a place in even the choicest collections of stove Ferns. It is a native of the

Andes of South America, from whence it was sent to Kew by Mr. Gair, of Falkirk. Its fronds are tripinnate and finely cut; in the latter respect, indeed, it forms a charming companion to the delicate silvery *G. pulchella* or *G. Pearcei*. The undersides of the fronds are clear sulphur-yellow, a colour which contrasts well with the vivid green of the upper surface. Treated like other species of the genus it succeeds perfectly. All *Gymnogrammas* and many of their allies, the *Cheilanthes*, like a warm and somewhat dry atmosphere. Syringing, which is so beneficial to Ferns generally, must be dispensed with in the case of Gold and Silver Ferns, water overhead being fatal to their health and beauty. They succeed best in a compost, somewhat firm and peaty; and they must be very carefully watered, as any sudden extremes in the way of dryness or excess of moisture at the root will soon destroy them. In growing these beautiful plants avoid over-potting them, and let the pots used be thoroughly well drained. B.

Browallia elata for the Garden and Conservatory.—This is a good old annual, by no means difficult to cultivate; and, when well grown, very effective. Where cut flowers of a bright blue colour are in demand this plant is capable of furnishing them, and for conservatory decoration it is most useful, as, when well grown in pots, it continues blooming from two to three months at a time, and may be had in bloom all through the summer, autumn, and early winter, without much trouble. I have had it in bloom till the end of February; and, when mixed with such plants as *Chrysanthemums*, among which there are no blue colours, the appearance of the collection is thereby much enhanced. In mixed borders out-of-doors this *Browallia* may also be used with advantage, continuing, as it does, in bloom a long time. From some plants, that have been in bloom from July to the 8th of November, we have been cutting three and four times a week. Those who have not grown this plant should, therefore, give it a trial.—JOHN CROOK, *Tyenham House, Wareham, Dorset.*

Ipomæa Horsfalliæ.—I can find no means of propagating this handsome climber; both cuttings and layers have failed with us. If there is a way of increasing it known to you, kindly give us some account of it.—A. [Your correspondent is not the first who has found a difficulty in propagating *Ipomæa Horsfalliæ*. Many who try to strike it, use, at first, the points of the shoots, or soft wood, as they would do in the case of the generality of other plants; yet, close observers, even without previous acquaintance or knowledge of a plant, can tell from appearance what likelihood there is of propagating it from cuttings of hard or immature growth, as the case may be. Any plant so soft and deficient in fibre as the young shoots of this *Ipomæa* are for a considerable length, bears reliable evidence of the difficulty or impossibility of striking it from the soft immature points of the shoots. It does not root over freely from even the best selected cuttings, especially where there does not exist especial appliances for propagation; but if, early in the spring, cuttings are made from the thoroughly ripe wood, and inserted in small pots in good propagating sand, placed in a brisk bottom-heat, they will root. For a new beginner, I should recommend taking a ripe shoot from the plant, and cutting a portion of it into single joints, and the other portion into two-joint sections, one to form the roots, and the other to push growth. With some plants of the nature of this *Ipomæa*, an inexperienced propagator will succeed with one of these descriptions of cuttings and fail with the other; it is, therefore, better to have two strings to one's bow.—T. B.]

A "Ladies' Plate" for 1876.—The council of the Preston Floral Society has decided upon establishing a ladies' plate, to be awarded along with other prizes to the successful exhibitors of six out of twelve stove and greenhouse plants at the exhibition of 1876. The winner of the first prize will receive £25 or plate of that value, and the society's gold medal, value £12 12s.; the winner of the second, £15 and the society's silver medal; the winner of the third, £10 and the society's bronze medal; and the winner of the fourth, £5. The twelve plants are to be shown to the secretary before the end of this month to be marked for future identification, and each one is to be a young plant, and in a pot of not more than 6 inches diameter, inside measurement. The plants so marked must be cultivated by each competitor on his own establishment, and out of the twelve marked plants six are to be chosen by the competitor for exhibition. At the time of marking each competitor has to deposit two guineas, as a guarantee that he will exhibit his plants at the appointed time, and each competitor pays an additional two guineas as an entrance fee, to defray the necessary expenses of printing and advertising. Sixty plants have been already entered, and it is likely that others will follow before the end of the month. The object of the council is to encourage the cultivation of young plants by amateur gardeners.

THE FLOWER GARDEN.

THE GIANT LILY, AND NOTES ON SOME RARE HARDY PLANTS.

WHEN in Suffolk in the end of August last, I was much struck with the beauty of *Siphocampylus bicolor*, grown as a hardy creeper on the outside of the Rectory at Belton, near Yarmouth. It was then a mass of bloom and presented a very uncommon and striking appearance. The situation is sheltered and partially protected by a verandah, and the plant is covered with a mat in severe weather. It reached nearly to the roof. It is a pity that so pretty a plant should be so seldom grown. When visiting Mr. Thompson's interesting nursery at Ipswich, I was much struck with the gay appearance of a bed of *Leptosyne maritima*, and made up my mind, if possible, to have a bed of it next summer. Mr. Thompson also had in bloom a very pretty *Calystegia oculata*, which I had never seen before. It is white with a deep purple eye. Mr. T.'s little home garden at Ipswich teems with interesting varieties, among which one might linger with pleasure and profit for many an hour. During a visit to Lord Walsingham, I had the pleasure of seeing *Lilium giganteum* growing in all its native luxuriance at Merton; the plants form an avenue on either side of a narrow partially-shaded shrubbery walk, and are intermingled with *Rhododendrons*, *Azaleas*, and various other shrubs and tall herbaceous plants. They are not nursed and tended with any peculiar care, and seemed to flourish all the better for being left alone. Thin, tall, strong stems were crowned with plump seed-heads when I saw them in September. *Dianella cærulea*, which I never before knew to be a hardy plant, was growing in great luxuriance in Mr. Nelson's most interesting garden at Aldborough Rectory, near Norwich; and, in the adjoining village, Mr. Cook, the miller, grows *Lilium giganteum* almost as well as Lord Walsingham. I saw *Viburnum macrocephalum*, a shrub far too seldom seen, growing in sturdy strength, at Earsham Rectory, near Bungay; and, at Ipswich, Mr. Thompson had *Colubonia coccinea* in a condition which promised bloom before the close of the autumn. The late lingering of the mild weather has enabled many plants to bloom well here, which in ordinary seasons do but little good. Till last Wednesday I had *Exogonium Purga*, *Brugmansia sanguinea*, *Eurybia ramulosa*, and *Diplacus splendens* in full beauty in my garden. The Jalap plant (*E. Purga*) has survived two winters, and I have hopes that with care I shall keep the other three. Amongst the Croci collected and given to me by my friend, Mr. Elwes, I have flowered two quite new to me, which I believe to be *C. Cartwrightianus* and *C. lævigatus*. The former is a large and handsome flower, and the latter, though small, exceedingly delicate and pretty. Do any of your readers grow, and have they a bit to spare of, *Erodium incarnatum*? I have lost it. It is a favourite and I much wish to recover it. I was much interested by the account given a short time since of *Solanum lycioides*. How and where is this plant to be obtained. H. HARPER CREWE.

The Rectory, Drayton-Beauchamp, Tring.

FERNS IN PARKS.

AT present, when gardening has reached such perfection, and has engaged the attention of so many amateurs, the cultivation of Ferns has become very general, and new varieties for both greenhouse and garden are continually making their appearance. Although they can boast of no flowers, their lovely fronds delight the eye, whether we consider the broad-leaved, the feathered, or the striated kinds. Some of the small Ferns are distinguished by graceful elegance, others reach a great height, often rivalling in that respect even the majestic Palm itself. Tropical Ferns are, as a rule, beyond the reach of many amateurs; but the indigenous sorts are well worth cultivation, as, though less splendid, they are very beautiful and varied. What, for instance, can be more charming than the male Fern (*Polystichum felix-mas*) with its large shining leaves, or the common Polypody, which flourishes luxuriantly among forest trees, the Wall-rue Spleenwort, and the Bristle Fern (*Asplenium Ruta-muraria* and *Trichomanes*), which grow on rocks exposed to the sun, or the Hart's-tongue (*Scelopendrium*), and Maiden-hair, which love the shady banks of streams. In thickets, among trees and shrubs, our tallest Ferns abound, such as the male Fern, common Bracken (*Pteris aquilina*), and the Royal Fern (*Osmunda regalis*); in such situations they richly carpet the ground with their long and exquisitely cut fronds. How pleasant, after a long tiring country walk on a hot day, to dive into a forest glade and rest for a while on a bed of Fern and Moss, with a canopy of foliage overhead, so thick that the rays of the sun can hardly penetrate it. I am acquainted with a park of 300 acres almost entirely given up to the growth of Ferns, of which the proprietor possesses numerous varieties, but he prizes particularly the Royal Fern, which grows there in great abun-

dance; the beauty of its fructification, which almost resembles blossoms, has caused it to be sometimes named "the Flowering Fern." Ferns require little culture, it is sufficient to plant them in damp and shaded situations. They, sometimes, appear to make no progress the first year; but they are so tenacious of life, that after lying dormant for a long period, they grow luxuriantly the following spring. There are few gardens where there is not space for a little Fernery, which, with little trouble, may be made into a charming spot; it will, besides, furnish a supply of foliage for floral decorations. Nothing is more effective than the common Bracken as a background for flowers.

COLOURS OF FLOWERS.

As a gardener not deeply versed in matters scientific, I have often been struck with the marvellous beauty, as well as diversity, of colours to be found in flowers. To thoroughly understand the blending of colours, and how the fertilisation of flowers possessing certain hues is pretty sure to produce others of a specific colour, one must needs be an artist. To suppose that a brilliantly-coloured flower has a special attraction for insects is no new idea, but to put forward the notion that rich colours are necessary in order to attract insects for purposes of fertilisation seems to me to be a mistake. Take, for instance, Mignonette; though its flowers are devoid of colour, yet bees will hover over them in myriads. In this case not colour but fragrance seems to be the attraction, the latter giving intimation to the bees that the food of which they are in search exists there in abundance. The remarks which you have quoted in reference to this matter seem powerful obstacles to the progress of the idea that colour is necessary in order to attract insects for purposes of fertilisation, and the conclusion seems obvious that brilliant colours have little to do with the matter. Indeed, if we were to follow the theory out to its fullest extent, it is obvious that none but brilliantly-coloured flowers could exist, inasmuch as no others would be fertilised. Where, amongst wild flowers, is there to be found a variety of more brilliant and attractive hue than the scarlet field Poppy, and yet it is not so common as Charlock or Groundsell, or even Shepherd-Purse, none of which have flowers in any way very attractive? Perhaps, on further enquiry, it will be found that insects, after all, do not play such an important part in regard to the fertilisation of flowers as has been imagined, and that, in our haste to ascribe to them such virtues, the existence of self-fertilising powers in plants may have been, to some extent, overlooked. There is another point to which attention should be directed. The pollen taken from a flower will only be effective on the pistils of others of the same species; and as the insects in their rambles proceed upon no definite plan, but alight upon one species and then on another, mixing all kinds of pollen together, it seems difficult to imagine that under such conditions fertilising properties will be retained. *Nature* says that autumn tints in leaves and fruits are often as rich as those existing in flowers, so also are the hues of the foliage of many plants, both tender and hardy, at all times. Of what use, therefore, are such rich hues in foliage, the normal colour of which should be green? What one would like to understand better is this—Why is it that plants wholly of the same species, and, in all other respects, alike in growth, in foliage, in habit, in period of blooming, growing in the same soil, and existing under exactly the same conditions, should yet produce flowers of such wondrously diverse hues of colour? In garden varieties of plants, most of this diversity is due to hybridisation, but the efforts of the hybridist in this direction differ from those of insects, inasmuch as, whilst theirs have no aim beyond the maintenance of life, the efforts of the hybridist are directed by intelligence towards securing a specific object. Of course, with such efforts have been combined the ennobling influences of cultivation, and what these alone have done in the way of improving the size, quality, and colour of flowers, no pen can adequately describe. High cultivation also effects other changes in plants, into the character of which it is unnecessary now to enter.

A. D.

WALLFLOWERS IN LONDON MARKET GARDENS.

FROM Christmas to May these are brought to market in quantities, varying more or less according to the mildness or severity of the season; in February, however, they are most abundant, being then sometimes brought into Covent Garden in waggon loads. The spikes of bloom are cut about 8 inches in length, and are tied with a wythe, or piece of matting, into little bundles, such as could be grasped with the two hands. Every grower saves his own seeds, and sows them, in the succeeding February or March, broadcast in beds in the open air, transplanting, when the young plants are large enough, in rows

1 foot or 15 inches apart, under fruit trees, or between lines of fruit bushes. The practice of sowing thus early differs entirely from that of the private grower, who, as a rule, sows his seeds in May or June; he has then to wait till the succeeding April before he can get a full crop of bloom, and his plants continue to flower until July; whereas, had he sown his seeds in February, transplanted his plants into any odd corner or reserve ground, and in November moved them into his spring flower beds, he would have had flowers at Christmas instead of April. Moreover he must lift his plants in May, long before their mass of bloom is exhausted, in order to make room for summer bedding plants, and thus a loss is experienced. This is one of the crops that thrive well in a shady place, and, although somewhat drawn during the summer time, the plants are too hardy to be injured when cold weather comes; indeed, they rather enjoy the change, as then the trees become denuded of their leaves, and, as our winters are not often very severe, the Wallflowers branch out and grow. When they become exhausted they are thrown away, with the exception of some of the finest, that have been marked and kept for seeding purposes, and which are allowed to ripen their pods undisturbed. After the Wallflowers are removed, the ground is manured and dug, and by this time the spring seedlings will be fit for moving, and are sometimes transplanted into the ground just cleared; or, if desired, it can be cropped with Beet, Sprouting Broccoli, or Brussels Sprouts; and the young Wallflowers planted in the space occupied by these the previous year. Market gardeners never keep their Wallflowers more than one year, as old plants are not so free growing or continuously blooming as young ones, which, when pinched, produce a multitudinous supply of young flowering shoots. Great care is taken every year to select the darkest-coloured and earliest-flowering kinds from amongst the immense quantities which are grown, and this continued selection of the finest and earliest sorts has a material influence upon their time of flowering. One year I procured some much-applauded varieties from different sources, and in March I sowed them, together with some of my own old-fashioned market strain (I may say old-fashioned, for during my experience of twenty-seven years I never grew any but the one kind, which was old-fashioned when I started), all on the same piece of ground, but each kind in separate patches. I transplanted them all under the same conditions, with the following result, viz.:—My own seedlings came into bloom in the last week of December, and have flowered well since, and, with the exception of a bloom here and there amongst the others, it was more than mid-March ere they came into flower, my old strain producing the most and best-formed flowers and the darkest-coloured ones, with not more than half-a-dozen yellow-tinged flowers and not one striped one amongst them; whilst amongst the others one-third of the plants yielded yellow and crimson-striped or yellow blotched varieties, which, in the market, would not realise nearly the price of my own old-fashioned market-garden kind; consequently, I must discard the new comers and still retain my old and valuable strain.

W. F.

Schizostylis coccinea.—Surely this plant is not half so much known or appreciated as it deserves to be. It is pre-eminently a flower for autumn, or, perhaps I should say, for winter, when the latter is mild. It is now the 25th of November, and I have a large row of it in full flower, and should the weather continue favourable it will keep in full beauty for at least another fortnight. With the exception of the Chrysanthemum, few November flowers are so hardy or so decidedly showy as is the *Schizostylis*; its masses of crimson flowers have a striking effect at this dreary season. The plant has a kind of *Gladiolus* look about it, but its habit is better than that of the *Gladiolus*; it is not so tall, and it throws up a greater profusion of spikes. When freely planted, as it ought to be, it will make a garden look gay far on into winter. It is of the easiest possible culture, perhaps too easy, as, if left to itself it becomes weedy. After plants of it have made their growth they should be lifted in July, sorted, and the strongest should be planted immediately where it is desired they should flower; the remainder may be planted out as a reserve for the following reason; without this precaution it throws up a quantity of stems that seldom bloom satisfactorily.—THOMAS WILLIAMS, *Ormskirk*.

A Golden-leaved Plant (*Diplopappus chrysophylla*).—Referring to this plant (see p. 424), I would be glad to know how it can be struck "freely." Of the plant sent us by Mr. Niven about two years ago we have raised a couple of little plants, now 1½ inches high! We find it as slow to strike as *Diosmas*, *Heaths*, and such like hard-wooded plants. Is *Diplopappus chrysophylla* "perfectly hardy" in England and Scotland? At Mr. Gorrie's garden in this neighbourhood it has stood the last three winters at the south end of his house, as well as the silver variety, *D. argentea*. This last makes a beautiful companion to the *chrysophylla*, and both are admirable

as foliage for cut flowers, and last seemingly an unlimited time in water. We have a pair of glasses, the foliage in which consists of *Artemisia annua* and *D. chrysophylla* in the one, and the silver variety mixed with the *Artemisia* in the other; purple flowers among the gold plant, and crimson or pink with the silver. The flowers and *Artemisia* have been renewed some dozen of times, but both varieties of *Diplopappus* are as fresh as when cut some weeks ago off Mr. Gorrie's bushes. The glasses being on a level with the eye, the "rich yellow pigment" of the one, and the pure white stalks of the other, are very attractive, and the habit of both most suitable for centres of nosegays in water. At this season I am not aware of any plant out of doors that has such a delicate bright shade of green (like the Larch in early spring) as *Artemisia annua*; always pleasing, it is now peculiarly refreshing to the eye. It is still growing, and has stood the five or six degrees of frost we have had here with impunity. Like all the *Artemisias*, it has a strong aromatic smell, but it need not be touched by those who dislike southernwood.—F. J. HOPE, *Wardie Lodge*.

The Origin of the White Japan Anemone.—Anemone Honorine Jobert is not a garden hybrid between *A. vitifolia* and *A. japonica*. The variety originated at Verdun-sur-Meuse about sixteen years ago, in the garden of Mr. Jobert. From there the plant came into our hands in 1860, through my grand-uncle, Mr. Gustav Memminger, of Verdun, a great amateur of plants, after whom the *Æsculus Memmingeri* is named. Mr. Jobert, his friend, obtained the Anemone Honorine Jobert from a large tuft of the old *A. japonica*, with red flowers, from which plant a root branch flowered with pure white flowers. Mr. Jobert successively cut down all the red flowering branches, and so raised the white variety. Our nursery was the first to introduce the plant to commerce, under the original name given by Mr. Jobert, *A. japonica Honorine Jobert*. I have often seen at Mr. Jobert's the original plant from which the white variety was fixed, and, therefore, I guarantee the exactness of my assertion.—O. FROEBEL, in the *Gardeners' Chronicle*.—[We have always doubted the supposed hybrid origin of this fine hardy plant. After the *Tritomas* and the *Pampas Grass*, it is, perhaps, the finest autumn-flowering hardy plant that has been introduced to our gardens for a generation.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Novel arrangements of Hardy Flowers.—A lady correspondent, interested in improving on the common mixed modes of grouping herbaceous plants, proposes forming the following beds, and asks advice upon them:—1. *Clematis Jackmanii*, with possibly a pale *Clematis* intermixed; edged with Japanese Honeysuckle or one of the *Vincas*. [Good.] 2. Bed of various *Fritises* and *Lilies*, edged with *Irish Ivy* or *Hepaticas*. 3. Common white *Pinks*, edged with pink *Restharrow*. [The *Pinks* are too short-lived in flower.] 4. *Roses* and Moss *Roses*, edged with *Myosotis dissitiflora*. 5. *Gloire de Dijon*, and General *Jacqueminot* *Roses*, edged with white *Jessamine*. [Excellent.] Could spring flowering bulbs be mixed with these without injury? so as to have flowers in the beds before the regular plants come out. [Yes; spring flowers could be grown well in such beds, and would add much to their charms.]

Another Wild Vanilla Plant (*Rudbeckia subtomentosa*).—The article in your last number (see p. 479) on the Wild Vanilla plant, *Liatris odoratissima*, reminds me of another North American Composite in which there can be no doubt that *Coumarina* abounds, perhaps as largely as in the *Liatris*. It is *Rudbeckia subtomentosa*, a desirable border species, growing about 3 feet high with three-parted leaves, and flower-heads of a full yellow, and the disk of a reddish-brown. So long as the plant is duly supplied with moisture at the root it gives no evidence of the fragrant principle hidden within its tissues, but a spell of dry weather, or any neglect of its aqueous requirements, which results in withering and browning of the foliage, invariably develops the agreeable odour of the *Tonka Bean*. Dr. Gray observes in his manual that the receptacle of this plant is sweet scented, but the fragrance of the foliage also when dried is undoubted.—W. THOMPSON, *Ipswich*.

Sedum lividum.—Among hardy plants adapted for edgings or for covering slopes bordering footpaths or carriage drives, none excels this *Sedum*, which, when grown on rock-work, is not to be compared with what it is when grown where it can get plenty of moisture. When exposed to heat and drought, it becomes almost red in colour; but when grown where there is an abundance of moisture, it spreads rapidly and assumes a rich deep green hue. It roots on the surface with great rapidity, and may, therefore, be speedily propagated. Last spring I planted, for a sloping edging, very small pieces in a single line. It is now a perfect mass of green, scarcely exceeding an inch in height, 9 inches in width, and as level as a piece of turf. Its rich verdure is pleasant to the eye, and it always looks neat and needs but little attention to keep it in order. In spots where turf will not thrive, especially if rather damp, this *Sedum* will probably do well.—A. D.

Turfing v. Sowing Grass Seeds in Town Squares.—With reference to sowing Grass seeds on some new ground just added to Charlotte Square, Edinburgh, Mr. McNab makes the following remarks:—The sowing-down system in public squares is often attended with a good deal of trouble and anxiety, depending much on the weather at the time when the seed is put in. If dry and windy, it is often blown off the ground, and the walks suffer in consequence; and a second sowing has to be resorted to. I wish, therefore, to suggest the desirableness of turfing all the ungrassed portions, so as to finish them off permanently at once. The expense will certainly be a good deal more than that attending the sowing-down method, but the turf looks infinitely better, besides being afterwards easier cut and kept.

Flowering Evergreens for a Lawn: *L. E. Arbutus Croomi*, *Berberis Darwini* and others, *Double Furze*, *Laurustinus*, *Portugal Laurel*, *Rhododendrons*, *Kalmias*, *Andromedas*, and *Yuccas* in variety.

THE LIBRARY.

THE AMAZON AND MADEIRA RIVERS.*

THIS forms a very handsome volume, of which Messrs. Chapman and Hall have just published an English edition. The object of the expedition was the exploration and survey of the banks of the Amazon and Madeira Rivers, and the adjacent regions, with the view of establishing railway communication where rapids and falls rendered the navigation of the rivers impracticable. Mr. Keller's notes, made on the spot, have been woven together by himself into a very attractive and interesting narrative, which, illustrated as it is by sixty-eight engravings on wood (some of them of remarkable excellence), forms a very instructive, and at the same time splendid volume. Mr. Keller's powers as an artist are remarkable; the striking tropical aspects of the region he describes being rendered with a spirit and effect that in some cases rise to the rank of first-rate art, while the engraver, by his sharp incisive style, has done full justice to the pencillings of the originals. Some of the vignette pictures, that serve the purpose of decoration to the initials at the commencement of the chapters, are very effective, especially one composed of the crown of a Palm with flowers and fruit, at the beginning of the Introduction, and that at Chapter II., composed of a vast trunk of a tree overgrown with Orchids, Bromeliads, and Ferns. Among the larger plates the "Halt under a Giant of the Primeval Forest" is very cleverly drawn and engraved. The "Lassoing an Alligator" is also a well-conceived and interesting illustration; and the "Head of a Tapir," swimming the river, pursued by dogs, is worthy of the pencil of Wolfe. "The First Interview with the Caripana Indians" should also be especially noted. It is a really excellent pictorial composition that might be enlarged to the dimensions of an oil painting, which would, if executed in a style fully equal to that of the present engraving, form a remarkable production. Two or three among the more eminent of French artists might be named who would so treat it as to produce a noble picture. The engravings are, indeed, superior in every respect to the illustrations generally found in books of travel. Perhaps the most remarkable of these striking and artist-like illustrations is the one entitled "A Giant of the Forest." It is called by the artist a "buttressed tree," and the natural supports have, in fact, somewhat the appearance of buttresses of masonry, as shown in the annexed engraving. The tree is the wild Fig, which attains to enormous dimensions in the Amazonian forests. Its wood is of a soft, spongy character, possessing singularly strong powers of vitality, by which it is enabled to adapt its growth to any situation, even under the most adverse circumstances. Any branch, or part of a branch, broken off and plunged into the ground will strike root and grow more freely than a Willow pole; "even," says Mr. Keller, "if a young tree be taken up by the roots, and the head planted in the ground where the roots recently were, the branches so planted will rapidly become roots, and the roots will develop themselves into branches, forming a new head of grotesque and singular character." The forest region skirting the course of the Amazon and Madeira Rivers appears to be a land of root wonders, of which those of the *Paxiuba Palm* are another curious example. This tree does not, like the giant Fig, throw out trunk-roots in the form of solid buttress-like masses, but obtains for itself trunk-support after another fashion, in the form of stilts, from which peculiarity it is popularly known as the *Stilt Palm*. From ten to fifteen of these root-stilts converge at about 8 or 10 feet from the ground, and from their meeting rises the trunk of the tree. But, in the mysterious twilight of these dense forests, it is the Orchids and Bromeliads that, above all, rivet the attention of the explorer; for, where a sunbeam, finding an opening through which to dart a ray of tropical light, happens to fall on a raceme of gorgeous Orchid flowers, or Bromeliads, mingling with tree Ferns which, with them, clothe the trunks of the forest monsters to a great height, forming true "hanging gardens," the effect is dazzling and fairy-land-like, even to those conversant with the wonders of a tropical forest.

H. N. H.

* "The Amazon and Madeira Rivers, with Sketches and Descriptions from the Note-book of an Explorer." By Franz Keller, Engineer.



A BUTTRESSED GIANT IN AN AMAZONIAN FOREST.

GARDENING FOR THE WEEK, AND AMATEUR'S CALENDAR.

Flowers Obtainable for Bouquets.

FLOWER markets are now well stocked with material suitable for floral decorations of every description; amongst others, blossoms may now be obtained of Arums, Allamandas, Azaleas, Begonias, Bouvardias, Camellias, Chrysanthemums, Cyclamens, Encharis, Epacris, Heaths, Fuchsias, Gardenias, Heliotropes, Primulas, Roses, Stephanotis, and Veronicas; Ferns, both British and exotic, may also be had. Therefore, with such abundance of material at command, most effective arrangements may be made. A hand bouquet exhibited the other day in one of the florist's shops in Covent Garden Market arrested my attention, being light and elegant looking; it consisted of the following flowers, viz., Gardenias, white Azaleas, white Bouvardias, yellow Rose buds (Maréchal Niel), bright blue Nemophila, and a few other light-coloured flowers, the whole being shrouded with fronds of *Adiantum cuneatum*, a fringe of the same Fern lying out over the paper round the edge. The Bouvardias and other light-coloured flowers were so mounted as to stand up above the others, an arrangement which tended to enhance the light effect of the whole. Button-hole bouquets were mostly composed of a Rose bud, Camellia, Gardenia, &c., backed by some Fern fronds and other light-looking flowers. Cheap bouquets were mostly made of blooms of Chrysanthemums and those of other out-of-doors or half-hardy plants. Attention should also be directed to the pretty crowns, crosses, and other devices made of Grasses and everlasting now exhibited for sale in Covent Garden for Christmas decoration, all of which, in their way, are most effective. The bursted seed-pods of the Gladwyn, loaded with coral berries, which were so much admired last season, have also already made their appearance; these, mixed with evergreens, form pretty decorations at this season.—A. HASSARD.

Flower Garden and Pleasure Grounds.

Little can be done in these at present. The weather, however, continues favourable for the prosecution of necessary alterations of all sorts, and the transplantation of trees and shrubs, wherever deemed necessary, should be attended to with as little delay as possible; and, in performing this work, if a little leaf soil can be placed around and among the roots, it will materially assist the production of new fibres; where the natural soil, too, is of a retentive character, a portion of sand or road-scrappings may be added to it with advantage. All shrubs or trees which are likely to require staking, in order to prevent wind-waving, should have that attention bestowed upon them when they are transplanted, and, unless the soil is very wet, a basin should be formed around each tree or shrub, and a good supply of water should be at once administered to it; this will tend to settle the soil around the roots and fibres, and will also help to steady the plants. As soon as the water has been fairly absorbed the basins should be filled in with soil, and when all has to be made level, a good mulching of partially rotted manure should be at once applied. Let every necessary attention be paid to the sweeping and rolling of walks, as well as of lawns, Grass belts, and verges. The Oak, and a few other sorts of trees, still retain a portion of their leaves, and their gradual falling renders daily sweeping up necessary. Late-sown annuals, which are intended to stand the winter and flower early in spring, will be much benefited by a slight protection of some sort, such as a few Yew or Laurel boughs stuck amongst them; and beds of Fuchsias, Tea-scented Roses, and other half-hardy plants (which have already been cut down by frost), should now be covered, to the depth of several inches, with tan, sawdust, or cinder ashes. Attend very carefully now to the wants of bedding-out stock of all sorts, more particularly to that portion of it which may still occupy cold pits and frames. Frequently remove all dead and decaying leaves, and cover up whenever danger from frost is apprehended. Little water will be required at present; but, where this is found to be really necessary, let it be supplied early on fine mild days, when air can be afterwards freely admitted in order to dry the foliage, if possible, before nightfall; and, in structures in which there are means of applying fire-heat, this should be done occasionally during fine days, accompanied by abundant ventilation to drive off as much as possible of the damp which, at this season, is so frequently injurious to such stock.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Indoor Plant Department.

Ferns should now be in a state of rest, which is better secured by a low temperature than by absolute dryness. A temperature of from 55° to 60° minimum is sufficient for stove varieties, while mere exclusion of frost will suit greenhouse ones. Such as are producing young fronds should be kept at the warmest end of the house, and

should, at no time, lack water. Tree-Ferns, too, should always have a good supply, for the surface-soil about them frequently presents a moist appearance when beneath it is injuriously dry. Cut away only such fronds as are quite dead. Hardy Ferns grown in pots should be placed in frames, on back stages in greenhouses, or plunged out of doors where water cannot lodge about them. Now is an excellent time to clean such plants of thrips and scale; when they have been thoroughly freed from these pests, the young growths come up vigorously, and have a much better chance of development than when old fronds, infested with insects, are present. Fumigating Ferneries, too, may now be beneficially practised, even oftener than in summer, inasmuch as the fronds in winter are harder and better ripened than in summer, and, consequently, less liable to injury. A good stock of young Ferns should be kept in a brisk moist temperature for supplying cut fronds, for furnishing purposes, and for filling ornamental baskets. Where spores have germinated, and have made a little progress, they should be pricked off in small patches at first, and afterwards, when a few fronds have been formed, the plants may be potted separately. Club Mosses also form good decorative subjects, the small kinds, like *Selaginella denticulata*, *Kraussiana*, and delicatissima being available for edgings, and the larger ones, like the varieties of *formosa*, *Africana*, *inequalifolia*, and others, make good substitutes for Ferns when kept growing, but when cut they soon fade. They may likewise be kept growing all through the winter, for as they grow so quickly, and can be propagated so readily, there is no necessity for resting them. Although they like plenty of water, even in winter, stagnant moisture is injurious to them.

Orchids.

A great variety of these is now in bloom, amongst which the following are, perhaps, the best, viz., *Oncidium Rogersii*, *ornithorhynchum*, *flexuosum*, *Papilio*, and *crispum*; *Odontoglossum Alexandræ*, *bictoniense*, *Uro-Skinneri*, *gloriosum*, *læve*, *pulchellum*, *nebulosum*, *grande*, and *blandum*; *Zygopetalum Mackayi*, and *maxillare*; *Dendrobium moniliforme*, *chrysanthum*, and forced plants of the noble; *Cypripedium barbatum*, *Veitchii*, *Dominianum*, *concolor*, *insigne*, *longifolium*, *vexillarium*, *villosum*, and *Sedeni*; *Cymbidium Mastersii*; *Vanda cœrulea*; some *Cattleyas*, *Lælias*, *Barkerias*, and *Angræcums*; *Calanthe vestita* and *Veitchii*; *Goodyera discolor*, *Masdevallia towarensis*, *Mesospinidium vulcanicum*, and many others. Most of the plants in the East Indian department will now be approaching a state of rest, therefore a night temperature of 65° will be sufficient, with a rise of 10° by day. Lessen the supply of water to the roots in general, but at no time leave the roots or atmosphere without a moderate supply. Never permit Orchids to shrivel for want of water, particularly *Vandas*, which are apt to loose their foliage when kept too dry, thus impairing their health and appearance. Give plenty of water to *Calanthes*, and, if possible, never allow their blooms or those of any of the other Orchids to get wet, or they will spot and soon decay. Keep plants of *Cœlogyne cristata* at the end of the house where there is most atmospheric moisture, and give them plenty of water, but do not spill it about their rising flower-spikes. *Cypripediums*, *Lælias*, *Zygopetalums*, *Oncidiums*, and *Odontoglossums*, coming into flower, should be placed at the warmest end of the Mexican house, until their blooms open, when they ought to be removed to the cooler end, so as to prolong their period of flowering. A temperature of from 50° to 55° at night is sufficient for these. *Pleiones* that have done blooming, should now be re-potted at once, using a mixture of Moss, peat, loam, and sand, in well-drained pots. Give them plenty of water, and a position in the *Cattleya*-house. Sponge over the leaves of *Vandas*, *Angræcums*, and other Orchids, so as to keep them clean from insects, which can only be done by continuous attention.—B.

Indoor Fruit Department.

Grapes.—The preserving of Grapes in bottles of water is a system to which a good deal of attention has lately been directed. It relieves the Vines of their crop earlier than would otherwise be the case; but where it is unnecessary to start them before the end of March or beginning of April, ripe Grapes hanging on them do no harm. Where the Vinery can be kept free from damp, bottling need never be had recourse to; but where Grapes are hanging in a house in which bedding and other plants are stored, it is much better to cut and bottle the fruit than to let it hang. In cases in which a few bunches only are hanging in a large house, they should be cut, an operation by means of which much fire-heat is saved. Bottling consists in cutting the bunches, either with or without a piece of the shoot attached to them, and in putting the ends into a bottle full of pure water. These bottles may be of any size, and, when filled, should be placed in a fruit or other room in which there is a constant circulation of dry air, and a temperature of from 40° to 45°, in this way they

will keep fresh and good for months. Sometimes Grapes are preserved by inserting the stalks or stems of the bunches into Potatoes, Turnips, or Beets, a plan by which they may be kept in as good condition as in bottles of water. When preserved in a room, either in water or in roots, they are not, however, entirely exempt from damp and decay, they should, therefore, be looked over once or twice a week in order to remove all mouldy berries. Continue to prune and clean Vines, as they shed their leaves. In instances in which the wood is not yet thoroughly ripened, a little fire-heat and plenty of air should be given without delay, as much of next year's success depend on how the wood is ripened this season. Heavy rains being now prevalent in some districts, outside borders should be covered: young pot Vines which were placed outside when their wood was ripe should be removed under the cover of, say, a cold shed, in order that they may be protected from the weather.

Pines.—Material for renewing the bed in which to start early-fruited Queen Pines should now be got in readiness; and tan, where it can be conveniently got, is the best for the purpose. Leaves are still used in many places, and very good fermenting material they make, Beech ones retaining heat best; but, where bottom-heat can be supplied by means of hot-water pipes, any kind will do. They should be collected now, and put up for consolidation, some six months before using them, in a heap in any out-of-the-way corner. The advantage which leaves have over tan consists in the valuable leaf-mould which the leaves furnish, while the spent tan is quite useless. No time should now be lost in collecting soil for potting Pines. The best is the top spit of an old pasture, where the soil, to the depth of 3 or 4 inches, is an impenetrable mass of fibre. It should be cut immediately after hard frost, as then most insects will have buried themselves considerably below the surface; few insects, however, affect Pine roots; potting-soil should, however, be free from earth-worms. That intended for next year's use is gathered by some now, and stored in Potato-pits like ridges, Grass-side downwards. I like it best just a month or two after it has been cut, and before any of its nourishing qualities have escaped.—J. MUIR.

Peaches and Melons.—In the early house, Early York and Royal George Peaches, and Violette Hâtive Nectarines are swelling their blossom-buds without fire-heat, and with abundance of air; the mild weather of the autumn acting on the well-ripened wood, and the influence of a soaking of water on the inside borders, after a lengthened period of comparative dryness at the roots having had the desired effect of moving the trees, no fire-heat will be necessary for some time to come, unless very sharp weather should intervene. Peaches will bear a very low temperature if the blossoms be dry, and it is always advisable to force very slowly at first; time can be made up with a little pressure at the two swelling periods. Trees in cold houses, and even standard trees, will now be free of leaves, and the necessary pruning and tying or nailing may be performed; it is doubtful with trees under glass whether any time is gained by allowing them to be detached from the wall until spring, with the view of retarding the blossom; but it is a good plan to wash them with quick-lime mixed with a little soot, in the shape of a thin paint. Not unfrequently, some variety of the scale insect will attack Peach trees under glass; as soon as detected, the affected parts should be gone over with methylated spirits, using a small hair brush. Fowler's insecticide, mixed with a little olive oil, may also be used with advantage. Now is the time to think about making contemplated alterations in the way of planting, either where new sorts may be wanted as a substitute for some unsatisfactory variety, or where a tree may have become exhausted; in every case choose young healthy trees when planting afresh; trees, which have been much cut with the knife when young, are sure to get cankered when they get older. The inside borders of Peach cases should have a good watering after the foliage has been all cleared away, and the trees tied, if done at once; but should the trees, for want of time, not be tied at once, it will be better not to defer the watering. Remove all the effête soil from the surface of the border, picking it out, where the roots are not very abundant, with a steel fork; top-dress with rotten manure, and again cover the manure with some fresh soil, and water it in; wash down the whole of the woodwork with warm water, and whitewash the back wall with quicklime.—W. D., *Canford*.

Hardy Fruit

As November is pre-eminently the month to plant, a good many may be anxious to know the best fruits to select for that purpose; I therefore venture to name a few, premising that what will suit one locality will not always give satisfaction in another. Among Apples the following are useful and pretty sure croppers, viz.—Dessert: Oslin, Early Harvest, Red Astrachan, Mother Apple, Cellini, Red Ingestre, Adams's Pearmain, Cox's Orange Pippin, Hubbard's Pearmain, Golden Pearmain, Scarlet Nonpareil, Old Green Nonpareil, Golden Pippin, King of Pippins, Downton Pippin, Pear-

son's Plate, Ashmead's Kernel, Melon Apple, Northern Spy, Ribston Pippin, Claygate Pearmain, Court Pendu Plat, Sturmer Pippin, Golden Harvey, Reinette du Canada, and others. Kitchen Apples: Keswick Codlin, Lord Suffield, Duchess of Oldenburgh, Alexander, Lord Burghley, Nonesuch, Gloria Mundi, New Hawthornden, Kentish Fill Basket, Small's Admirable, Tower of Glammis, French Crab, Warner's King, Blenheim Orange, Wellington or Dumelow's Seedling, Calville Blanche, Bedfordshire Foundling, London Pippin, Golden Noble, Red Beefing, Besspool, Winter Majeting, Northern Greening, with the new Apples Lady Henniker and D. T. Fish. These Apples are fit for use very much in the order in which their names stand, and will be found to furnish a good supply throughout the season. Pears.—The distinction between dessert and kitchen Pears will possibly soon be altogether extinguished, as experience proves that the finest dessert Pears are also the best for stewing and all cooking purposes. However, probably such magnificent kitchen Pears as Uvedale's St. Germain, Catillac, Flemish Bon Chrétien, and such a hardy one as the Black Worcester will never go out of cultivation. The first-named is not only magnificent in size and appearance, but is also one of the best keepers, and most useful for stewing throughout March, and even far into April. Such a Pear, again, as the Vicar of Winkfield is equally adapted for stewing and eating, though it is not of first rate quality. Among the best varieties of Pears for orchard culture and pyramids are Marie Louise, Flemish Beauty, Beurré de Capiaumont, Louise Bonne of Jersey, Beurré Diel, Winter Nelis, No Plus Meuris, Napoléon, Hacon's Incomparable, Beurré d'Amanlis, Beurré Superfin, Suffolk Thorn, Glou Morceau, Easter Beurré, and Passe Colmar. For walls and more sheltered situations, Jargonelle, Autumn Bergamotte, Gansel's Bergamotte, Beurré d'Amanlis, Summer Beurré, Beurré Giffard, Williams's Bon Chrétien, Duchess de Angoulême, Beurré Leon de Clerc, Hayshe's Victoria, Délices d'Hardenpont, Chaumontel, Prince Consort, Comte de Lamy, Beurré d'Aremberg, Knight's Monarch, Josephine de Malines, Ne plus Menris, Jean de Witte, Bergamotte de Espereu, Beurré Rance, and Easter Beurré, of which no one can have an excess, as it is the very best late Pear in cultivation alike for dessert and kitchen use, though it will do well in many gardens as a standard or pyramid; it is also worthy of a wall anywhere, and the fruits are mostly much finer when so grown. Plums, perhaps, rank next to Pears in importance for table and kitchen use. Like Pears, also, some of the best Plums for dessert, such as the Golden Drop and the Jefferson, are also among the best for kitchen use. On the other hand those fond of a sharp Plum enjoy eating such fine kitchen sorts as the Washington, Diamond, Downton Imperatrice, Pond's Seedling, or Magnum Bonum. Still, the distinction between kitchen and dessert Plums is usefully preserved, and the following will be found among the most serviceable for culinary purposes:—Early Prolific, Early Orleans, Prince Englebert, Victoria, Goliath, Pond's Seedling, Magnum Bonum, Mitchelson's Diamond, Cox's Emperor, New Large Bullace, white and common Damson. Dessert Plums:—Early Favourite, Early Green Gage, Early Blue Gage, Early Mirabelle, Royal Hâtive, Angelina Burdett, Prince Englebert, Jefferson, Royal Hâtive, Huling's Superb, Reine Claude de Bayay, Reine Claude d'Octobre, Coe's Golden Drop, Coe's fine Late Red, Guthrie's Late Green, and latest and, perhaps, best of all, though rather a shy bearer, and often requiring to be forced into fertility by the knife on its roots—the Ickworth Impératrice, a Plum that shrivels on the trees almost to a sweetmeat, which, if gathered and preserved with care, may be sent to table right up to November. Many of these Plums will do well in open quarters as dwarf bushes, pillars, or pyramids. As to pillars, I have found that they seem to baffle the birds, whether from their novelty of form or not my experience is not long enough to say; but a line of these bore a good crop last year and the year before, when trees of other forms and on walls were almost totally denuded of buds by the birds. Plums also do well as cordons, within 15 or 18 inches of the ground; but almost all Plums deserve a north or east wall, on which most of them grow, and bear well, though many of them are quite as deserving of a south or west wall as either Apricots, Peaches, or Nectarines. For dessert they are equal to the best of them; and, as a preserve, the Apricot, fine as it is, can hardly rank with the Green Gage, Golden Drop, or Jefferson. Aspect makes a great difference in the appearance and flavour of Plums. Golden Drops are higher coloured here on a north-west than on a south wall. Indeed, on the latter they are more of a dull grey than a golden colour; but the quality of the sombre-looking fruit far exceeds that of the more showy, as is often the case with other things, besides fruit.—D. T. FISH.

Kitchen Garden.

"A good workman," it is said, "never complains of his tools," but few, I imagine, will deny that a good workman will do more and better work with a good tool than an inferior one; and in these days of dear labour, if we are to have the full advantage of his skill, it is

incumbent on us to provide him with the best implement that can be obtained. When I came here, six years ago, I found the men digging with a common soft clumsy spade, and, the soil being heavy, each man had an ingeniously-fashioned piece of wood for cleaning it, and nearly as much time was occupied in cleaning and scraping the spade as in digging. I therefore obtained some of Lyndon's patent bright steel spades from Birmingham; and, having overcome the usual amount of prejudice on the part of the men, I soon found both the quality and quantity of the work vastly improved. Parke's steel fork is another implement that ought to be in every garden; and, although the first cost of these improved implements will be rather more than that of ordinary ones, they will last so much longer as to be the cheapest in the end, without taking into consideration the improved work done with them, and the increased amount of it. Give abundance of air to Cauliflowers and Lettuces in frames; Endives for winter use may be preserved for a long time in the following manner where the space under glass is limited:—Tie them up when dry, lift them with balls, and pack them horizontally in dry ashes in a ridge against a wall, just leaving the ends of the leaves out. Straw or other coverings should be always at hand to cover them on the approach of bad weather. Jerusalem Artichokes keep best in the ground, but they should be covered with half-decayed dung or leaf mould to keep out frost. In some places it is the practice to leave them in the ground year after year. This is, however, a mistake, both as regards the early maturity of the crop and the size and quantity of the produce. The crop should be lifted in February just before growth has commenced; the largest tubers should be stored away for use, and the medium-sized ones planted on fresh land. I do not know how it may be with others, but our cooks are always ready for them, for soup-making and other purposes, as early in the summer as they are fit for use; and, to meet this want, annual plantations are necessary. Globe Artichokes, like almost everything else, have made wonderful autumn growth, and will therefore be more susceptible to injury from frost than usual; therefore, pack litter well round each plant, and, when frost sets in, cover over the tops also. Where there is a large demand for them early, a few strong roots may be taken up and potted in large pots, and placed in a cool house to be helped forward under glass in spring, but the roots must not be divided or disturbed beyond removing the weak offsets that are not likely to furnish heads.—E. HOBDAV.

WITCH-HAZELS.

(CORYLOPSIS SPICATA.)

THE *Corylopsis spicata* of Siebold and Zuccarini is very much grown in the gardens of Japan, where it is known by the name of Avomomi. In the "Flore du Japon" these naturalists also make mention of and describe another variety of *Corylopsis*, which they classify as *pauciflora*; this species, they say, is known by its smaller size, both in height and foliage, its slender branches, and particularly by its paucity of blossom. Thus, whilst the catkins of the *Corylopsis spicata* bear ten or twelve buds, those of the *pauciflora* only contain two or three. In spite, however, of these differences of growth, we are still of opinion that the latter is only another sort of *C. spicata*; for the *C. pauciflora* is also known by the name of Avomomi in those gardens where it is most cultivated—whilst the Japanese herbalists even classify both under the common name of *Rosa Midsuki*. A botanist of Japan, Keseak, has discovered among the lofty mountains of Kinsin, presumably growing wild, an unknown species of *Corylopsis*, to which Siebold and Zuccarini have given the name of *Keseaki*, in honour of its discoverer. The *Corylopsis spicata* is a spring-flowering shrub, blooming in February and March. It is very hardy, and can be grown in almost any soil. It may be raised from cuttings made of well-ripened shoots, taken during the summer and struck in heat.

THE ARBORETUM.

TRANSPLANTING PINES AND EVERGREEN SHRUBS.

By ROBERT HUTCHINSON.

At some time or other, in the course of every proprietor's tenancy of his estate, he finds it necessary to transplant. It may be that other improvements or alterations have rendered the sacrifice or removal of some favourite tree necessary; or it may be that the strips and belt-ings planted in former years for ornament or shelter require to be thinned, and the destruction of many healthy young saplings which it may be desirable to save, is, by this process, rendered inevitable; while, in other and not unfrequent instances, the bleak bare fields, unclothed with landscape beauty, suggest the wish to call into immediate existence the leafy grove and sheltering woodland, to adorn and add to the beauty, and consequent value, of the estate; and in each of these cases is the operation of transplanting resorted to with more or less certain success, according as it is carried out judiciously, at the proper season, and with due regard to the relations of soil and situation, and also to the proper choice of subjects operated upon. While thus the practice of transplanting both trees and shrubs may be said to be very general, if not universal, few instances occur in Scotland of its successful accomplishment in the case of trees of considerable magnitude; this arises, probably, as much from the greater difficulty and expense of adjusting the necessary operations to the increased natural requirements of the subject handled, as from any insurmount-

able physical obstacle to the success of attempts to remove a large tree. It is rather a question of cost than practicability; for, if carefully done, the system may be applied with perfect safety to trees of considerable weight and stature,—the first principle requisite to be observed throughout the process being, that every part of the operation must be performed in the manner, and at the season, least tending to check the healthy circulation of vegetable life; otherwise, doubtless, failure will result, as has already in many instances throughout



Corylopsis spicata.

the country been the case; and money has thus been expended in vain, and the planter's hopes rendered merely nugatory. In prosecuting this system, then, the aim ought at all times to be, not to lift and re-plant the largest possible specimens, but to attain the utmost success with those plants operated upon. It must be admitted that at the best the practice of transplanting is somewhat opposed to Nature; and that even in perfectly successful cases, the plant sustains for a time a check, which is noticeable in the first season, in its new situation, by a much smaller development of foliage, with a total cessation in the formation of young wood; while, upon examination, the individual leaves seem dwarfed or stunted, and wither earlier than usual in autumn, thus indicating that the constitution of the tree has undergone a shock. During the second year in the new site, the same symptoms may be presented, sometimes in less, yet frequently in an aggravated degree; but gradually these pass away, and after the third or fourth year, although to that period less young wood than usual may have been thrown out, this torpid condition appears to have been the gathering up of fresh strength to repair the injury done to Nature, and she again resumes her functions with all the former, if not with increased, vitality and vigour. The art of transplanting resolves itself into two distinct systems. These are, first,—transplanting of saplings from 3 to 8 or 10 feet high, which we may here style horticultural transplanting; and, secondly,—transplanting of large trees or specimens for landscape or park-wood effect, which we may denominate arboricultural transplanting. Different methods of conducting the operation may be adopted, according as one or other of these two systems is selected. The general principles, however, are in both cases the same, and the same objects must be borne in mind

in either method, viz., to disturb the processes of Nature in the growth of the tree as little as possible; and, when disturbed, to provide a speedy and efficacious remedy. In choosing between the two systems, we undoubtedly prefer the first mentioned, as unquestionably safer, more economical, and progressive than the other; and where, from experience, we have been able to compare results, these are decidedly in favour of the smaller and more easily removed specimens; and if good trees be chosen, say from 4 to 8 feet high, for purposes of immediate effect, success will be attained with them, far more certainly, than by moving much larger trees; while the permanent results of selecting specimens of the sizes we have indicated are equally in favour of the younger trees. Large plants cannot be moved without the aid of cumbersome mechanical appliances, involving time, expense, and risk; and the end attained (if successful) by such a process is hardly commensurate, except in very limited and extreme cases, with the amount of outlay and labour required.

Transplanting large and heavy Trees.

The art of transplanting really large and heavy trees must ever be limited, for it is not applicable to the general purposes of utility. It can only be applied for ornament, and for wooding for purely picturesque effect. Doubtless, the system acquires a value of its own, when bare, bleak, unsightly grounds are clothed, and sheltered, and ornamented by its aid; but there is one essential to be carefully observed in adopting this extreme method of transplanting, and that is, to guard against merely moving large trees to mutilate them, or promote their decay. Into one or other of these evils the incautious planter is apt to fall, in attempting, without sufficient preparation, great care, and adequate machinery, to remove any large hard-wood tree or evergreen; and, where caprice or necessity renders it imperative that transplanting be carried out upon such a scale as this, it would be well that the expense of such operations be also taken into account beforehand, for to ensure success with heavy objects removed, the labour and time required must be neither stinted nor grudgingly given. The first point to be considered, under either of the systems of transplanting specified, is the selection of a proper subject. Assuming that the operation is to be performed for landscape effect, and that a large specimen, say 20 feet high, is to be moved; for unless it is desired to attain for special reasons immediate effect, we recommend (as before stated) for general purposes, the choice of much smaller plants, not exceeding 10 feet in height. The tree chosen must have a light well-branched head, with particularly clean and healthy bark on the trunk. Too spreading a top is to be avoided, for, as it is always preferable to secure a proper balance of power between the roots, on the one hand, and the head or branches on the other, and as the proportion of spread or roots in an ordinary average soil is about two-thirds of the diameter of the branches, so much less labour is required, and more certainty in obtaining a good root-ball secured, if a tree be chosen with a well-arched tapering or conical habit of branching, rather than one whose wide-spreading expanse offers more immediate shade. Tall, drawn up, narrow specimens, with few branches, should be avoided. They are invariably deficient in roots, and weakness in this essential particular is certain to predicate failure after removal. Certainly, in selecting trees to be transplanted, the head should always be the criterion of choice, for, independently of its indicating the future habit, appearance, gracefulness, and value of the tree, it is the best index to those unseen parts of its mechanism, the roots; and it may be stated as a rule, that the tree with the best head is sure to have the best root. The situation of the tree to be removed, is the next point requiring attention. An isolated position is the best of all for purposes of removal. The roots in such a case are generally better proportioned, and more equally disposed on all sides, and if the tree has otherwise a healthy appearance, these are more likely to be easily secured and safely moved in the operation of transplanting. The more confined the position of a tree has been in its early years, the fewer and weaker are its rootlets when it becomes tall, and consequently the less fitted are they to resist the interference and disturbance which transplanting causes; while, on the other hand, the more open and free to the influence and circulation of air the situation of the tree has always been, the more dense, numerous, and healthy are the underground fibres. Where, therefore, isolated specimens cannot be procured, we prefer selecting for our operations of removal, good trees grown in narrow strips, or upon the edge of a plantation. But, independently of the advantages of situation to the proper and healthy conformation of rootlets in the specimen to be removed, there are other considerations necessary to be borne in mind, which are of considerable moment in this particular, as bearing upon the general health and constitution of the tree. When planted in thicket, the plant is accustomed to a more regular and milder temperature than it would enjoy upon an open, exposed situation

Thus, in woods, precipitation would be less regular, the thawing snows and spring showers being absorbed by the loose bibulous mould, and, consequently, nourishing the spongioses in their retentive bed of absorbent earth, so that they in this way lay in a store of moisture to last during the drought of summer; and, owing to the peculiarity of the situation, the supply of food for the numerous rootlets, when required, is well provided for. Remove the tree to open ground, and the habit it has thus acquired is interfered with and changed. Place the specimen, by its removal, under the open vault of heaven, exposed to every breeze or gale that blows, and to all the vicissitudes of a changing temperature, and its constitution suffers from the change. The earth, it is well known, parts with its warmth by radiation to an open sky at one season, and at another imbibes an immoderate degree of heat from the direct unimpeded sun's rays. Hence, in such an open situation, to a tree or shrub hitherto unaccustomed to it, the climate proves excessive or extreme. Alter-nately the soil is saturated with moisture and seared by the inclemency of winter's frost, or parched and hard bound by the fervour of the summer's sky. Cold and frost-chilled blasts sweep unrestricted along the dew line, and melt away the sheltering snow, hardening and drying up the very fountains of its scarce sufficient moisture; and how, under these changes, and subject to these alternations of circumstances, can any tree, hitherto unused to such vicissitudes, and only recently placed under their influence, be expected to survive the extremes to which its new position have subjected it? Yet such is the history of most cases of transplantation. The specimens are chosen from overcrowded denizens of woods, and are quite unsuited for any such experiment. Can we wonder, then, if their planters meet only with disappointment?

Tree Planting in Exposed Situations.

In exposed situations, experience shows that timber trees planted for profit, should be placed at as early an age as is compatible with other circumstances, in the stations which they are finally destined to occupy. One method of attaining effect within a comparatively short period in such bleak tracts, is to cover the ground intended to be planted, with rapid growing nurses only; the Austrian Pine, *Pinus Laricio*, or *Pallasiana*, for example, will suit the purpose well, and when these have attained a height of from 4 to 5 feet, spaces of about 6 feet diameter should be opened at stated intervals, and into these openings healthy transplanted hard-wood trees be placed. These may be from 6 to 10 feet high, and be lifted with good root-balls, as will afterwards be described. Planted thus, the nurses do not, as too frequently happens, choke and overtop the smaller deciduous trees; and if the operations of transplanting are carefully carried out in this manner, the hard-wood timber will at once, when placed in its new situation, be found successfully coping with the Pines in growth, and the permanent results, so far as the value of the timber is concerned, will be perfectly satisfactory, while probably from six to ten years are gained in the period required for developing the wood for economic purposes. Another essential consideration to be borne in mind in transplanting, is the season of the year at which the operation is performed. As a rule, the functions of Nature will be less deranged if the tree be removed when in its annual dormant condition. The habits of the different species of trees, Conifers, and evergreen shrubs, are so various, that the same period of the year will hardly suit any two of them for transplantation. On the one hand, in removing plants in the autumn, they are at once in their new site, exposed to the injury which severe frost during winter may occasion; while, on the other hand, spring-planting subjects the specimens removed to what is frequently of more vital consequence to avoid, namely, the sudden setting in of chill winds in April and May, followed by drought. In the case of the Conifers and evergreen shrubs, this contingency should always be averted if possible; and we find, from personal experience, that these species generally succeed best, under any circumstances, if undisturbed in their old sites until the end of April at the earliest. Indeed, there are many of the varieties in these classes which, if judiciously and carefully lifted, may be so operated upon during the whole summer, or at any time, provided the spring winds or winter severe frosts are avoided. About the end of September, or early in October, is, according to our experience, one of the best seasons for transplanting these special varieties, provided the weather be favourable. For general guidance, let this consideration, namely, the alteration of temperature in the soil, as well as in the atmosphere, regulate, to a great extent, the season for transplanting, and decide between the two rival periods of the year for the process,—spring and autumn. In this climate, when severe frost prevails during winter (usually after Christmas), and then breaks up, we generally experience for some time a considerable amount of rain. During this season, and under such circumstances, it is impossible to prepare the soil, by digging or trenching (as should be invariably done), for trans-

planting operations. This is more especially true of the heavier soils. As soon, however, as dry weather supervenes, and the earth has drained off all superabundant moisture, advantage should be taken to dig and pulverise the soil to some depth, say 2 feet, preparatory to planting. Leaving the ground thus turned over, and broken perfectly fine during April and the early part of May, heat is absorbed by the freshly-stirred earth, and its temperature is thereby increased, which will go far to aid and promote the development of the young roots of trees which may, at this season, be transplanted when the weather sets in dry. The species most suited for removal at this period of the year are the various *Abies* genera, the *Pinus*, *Cedrus*, *Juniperus*, *Cupressus*, or, indeed, the *Coniferæ* and evergreen shrubs generally. These may be removed of any size with impunity, if due regard be had to ordinary precautions, and to the general principles of phytology. But it is essential to the welfare of the transplanted specimen that the earth into which it is placed be dry. In fact, the surface-soil all round, having been exposed to the sun's rays, should be the first soil thrown into the pit, next the rootlets, for it is not only warmer, but drier, and more free, and, consequently, better adapted to the rapid propulsion of new spongioles. Care should be taken to give as little watering as is consistent with the foregoing remarks, especially in the case of shrubby evergreens. The surface of the ground may be once mulched after planting; but a better plan to adopt, if the specimens be small, is to puddle the roots well previous to transplanting, and after having lifted them carefully from their old situations. If watering should be requisite, owing to the setting in of very dry weather, it should be given overhead, *i.e.*, by syringing the foliage and branches of the newly-planted shrub or tree, which will tend to arrest the free perspiration of the leaves—a function which they invariably perform more profusely after transplantation, and which should, if possible, be checked till the roots have recovered sufficient hold of the ground to be able to supply the waste upon the system of the plant. This syringing may be applied several times daily, provided there be little or no sunshine, and will tend greatly to accomplish the object desired. In removing *Coniferæ*, evergreen, and other shrubs, care must be taken to rack or sprain none of the rootlets by too hurriedly drawing the plant from the ground, and so curtailing the mass of little fibres at the extremities of the large roots; and in placing the plant in its new situation, the pit should be sufficiently large to admit of the rootlets being well and carefully spread out, receiving as wide a lateral arrangement as possible on all sides amongst the dry stirred earth. For, as no tree can form a healthy development of leaves and branches unless it be supplied with a corresponding healthy development of roots and feeders, should any injury be done to the smaller roots, no matter what the species of the tree, and no matter whether that injury be done intentionally, under the name of pruning, or accidentally in the operation of lifting, the progress of such a mutilated specimen above ground will, until the injury be repaired by a new growth of rootlets, be comparatively dormant or retrogressive. No doubt some have advocated root-pruning as an aid to success in the process of transplanting; but such practice we hold to be inimical to all the best modes of conducting the operation. Sufficient task is already imposed upon the constitution of the tree or shrub by the mere fact of its removal; and there is no need wantonly to increase its risk of failure by removing any of the small terminal rootlets, which, by Nature's fiat are indispensable to the welfare of all plants; and any injury from which these soft spongy organs are so liable to suffer during transplantation, either from undue exposure to the air and action of the atmosphere, or through their delicate outer coating coming into rough contact with any foreign body, such as the hands or the implements of the workmen employed, ought to be guarded against with the utmost care and nicety. We have known no case in which root-pruning, in tree or shrub transplanting, has been of the least advantage; but, on the contrary, consider that the most recently made rootlets should be preserved entire and undisturbed with the utmost care. This is another argument against the attempt to remove specimens from thickets or plantations, as before referred to; for in such situations the fibres are fewer and weaker, and also, owing to the close proximity to other trees, the underground roots are too much interlaced and mixed with others to admit of their being extracted without considerable injury, and losing many of their newly-formed spongioles.

Autumn Planting.

Another season of the year in which the operation of transplanting large trees is a good deal practised, is the autumn—probably from the end of September, during open weather, till early in spring, when buds have commenced to swell, and sap to flow or rise in the tree. While we prefer the later months of spring, say early in May, or about the end of April, for *Coniferæ* and evergreen shrubs, and have frequently seen these varieties successfully removed at mid-summer, we prefer autumn for deciduous forest trees, especially

if they are large and heavy specimens; for about the end of September, or beginning of October, in the Scottish climate, at 2 feet underground (the depth at which some young rootlets bound), the mean temperature of the soil will average 52° to 65°, while the mean temperature of the atmosphere, at the same period, will vary in ordinary average seasons from about 48° to 55°. The soil being thus warmed, and closely approximating the temperature of the outer air, any unavoidable injuries which, in the process of transplanting, the roots of the trees removed may sustain from cutting, are the sooner and more easily healed over; while, at the same time, owing to the underground warmth and moisture, the growth and formation of fresh rootlets and spongioles are induced and promoted more than they would be in spring, when the temperature of the soil would be colder, having then fallen to about 38° to 40°, and when the want of these organs would be felt by the tree at a time when their loss could not be at once supplied, but which would by this period have been made good, in all probability, if the transplanting had taken place in autumn. As soon as the leaves of deciduous trees have performed their functions, and have fairly grown sere and withered, or been loosened and whirled from their branchlets by the frosty nights and gusty winds of October, the operation of transplanting forest trees may in favourable weather commence; and in removing these varieties of timber trees, it is well to do so in the order in which the various species come into leaf in spring. First, remove the *Poplars* and *Willows*, for in this latitude these begin to bud and leaf in the early part of April; then the *Larch* (small plants only), whose tassels are hung forth about the middle of April; next, the *Plane* and *Maple*; and then the graceful *Horse Chestnut*, and tall drooping-branched *Lime* and *Elm*, which usually leaf ere May has gone. Later in the autumnal months the proud giant trunks of the wide-spreading *Beech* and lordly *Oak* may be transported to other sites; while last of all, and with the early days of the young year, the *Ash* may be operated upon, for it will be well into June ere the delicate green of the pencilled foliage of that useful and ornamental tree completes the clothing of the forest for the year. Of all these, the *Oak*, *Ash*, and *Larch* will be found the most difficult to transplant successfully, the *Elm* and *Lime* most easy. Before leaving this branch of the subject, we may as well detail the comparative results of transplanting evergreens and shrubs during autumn and spring, so far as we are able to do so from personal experience. In the month of November, 1856, a thick shrubbery of evergreens (composed chiefly of *Portugal Laurels*, *Bays*, *Hollies*, *Irish* and *English Yews*, with a few *Conifers*), was formed at C——, at an altitude of 90 feet above sea-level, in a heavy rich loamy soil, with close retentive sub-soil. The plants were about 3 to 3½ feet in height. A moderately severe winter ensued, and the losses were about 50 per cent. of the plants used. This damage arose not so much from the severity of the frost, as from the chilling east winds of spring in March and April following, acting upon the specimens before they had established their roots sufficiently in the ground after removal. The blanks thus created were made up in the end of April and beginning of May following, from the same nursery stock in the same way as formerly, and not one case of failure amongst these plants resulted. A common practice exists of "preparing the tree," which it is intended to transplant. This is a very safe and good precaution. It has hitherto been generally done thus:—The tree having been selected which it is desired to transplant, a trench is dug about 3 feet deep and 2 feet wide, at some distance (say 6 feet) from the stem and around it, and as much under the roots as can with safety be managed, so as to relieve the seat of the tree in the ground, and thus a complete system of undermining is established. This should be done in the autumn or spring prior to removal; or two seasons may be taken, and the trench be dug one-half each year round the roots of the tree; or the trench in question may be dug in the autumn, and again next autumn a similar trench, probably 6 inches nearer the stem, may be dug around the tree. In this way a "fresh growth" of young root fibres is induced, and the removal of the tree with greater safety is ensured. With the teeth of a rake or fork, the earth is next picked away from the ball which envelopes the mass of roots around the stem, until the young rootlets or fibres are reached, when the operation is stopped; fresh loam or virgin sand is added, or a compost applied to the rootlets of well and thoroughly rotted turf mixed with a good addition of lime. The trench thus filled up is then closely packed, so as to keep the fresh soil added firm and close to the points of the rootlets exposed; a turf is then planted on the surface to keep out drought, and the tree is thus left for two seasons, when the process of transplanting is proceeded with, and with much greater certainty of success, owing to the increase of the numerous rootlets which the adventitious mixture of fresh soil has created. In opening the trench round the bole to transplant the tree, care should be taken to dig outside the original line of the old trench of preparation, so as not to disturb the newly

formed spongioses. The tree is then raised out of its position, if large, by the aid of the usual machinery; and if small enough to require only manual labour, by the aid of a few workmen, in which case it may be placed in a box or frame, to support the root-ball upon a hand-barrow, and so transported to its new site with little risk. If some distance has to be travelled, a spring-cart should be employed, and upon no account should a common country cart be used for this operation, for the injury done to the ball surrounding the root-fibres, by its being shaken off, or cracked, will materially effect the success of the removal, from the exposure to which these delicate organs are subjected. So imperative is it to preserve from the action of the air these tender parts of the tree, that a further precaution may be advantageously adopted, which is, in removing with a spring-cart, to have the hand-barrow carried or borne by two labourers seated in the cart—thus not allowing the handspokes or bearers to rest on any part of it, and thereby taking any jolting of the springs, when going over uneven ground, entirely off the hand-barrow bearing the ball. In most instances the root-ball will be sufficiently large and heavy to resist the action of wind upon the tree, and to keep it steady and secure in its place without any props. Various modes of securing it, however, against wind, are frequently adopted; the best of which is simply to moor the tree by stays of rope or strandwire to stakes fastened into the ground. We have seen stobs driven into the earth quite to the head, at the four corners of the ball, and cross planks nailed to these, so as to steady the root and ball, but we think the rope-moorings preferable. Before placing the tree in its new situation, a drain should be cut from the bottom of the pit, at least 6 feet in length, from the drop of the branches, and filled in with broken stones, or loose coarse gravel, whereby the superabundant moisture is carried away from the young fibres; and they consequently enjoy greater warmth and equality of temperature, and thus become more vigorous and healthy. In transplanting from tubs or pots, it is well to wash out all the roots well, and free them from their pot-bound habit, puddle them, when damp, in fine pulverised dry turfy-loam, and in transplanting, spread out all the roots regularly and equally on all sides, upon a mound or rounded surface made at the bottom of the square pit in which the plant is placed. This hole, in the case of ordinary specimens of about 3 feet high (if Coniferous trees or evergreen shrubs), need not be deeper than 1 foot from the surface. Even in windy situations, and in sheltered spots, most of the Conifers may be planted (according to the kind) with their roots almost on the very surface of the ground, raising a mound on the top. In damp soils this mode we find very suitable. In the process of preparation referred to, injury is sometimes done to the tree. It happens that, in digging the trench, many roots (if the specimen be large) are cut, and the tree thus suffers as much as if it had really been transplanted, and when, two seasons afterwards, it comes to be removed, its system suffers a similar disturbance again. To prevent this, we prefer the mode of digging, in one season, only round one-half of the tree roots, and, in the following autumn, completing the preparatory process, by cutting round the others, and so removing the plant the third year. By this precaution the whole system of the tree does not receive such a shock or sudden check at once, but is prepared by a gradual process for its change of site.

Baring the Roots before Transplantation.

Another method of transplantation is sometimes employed, and, where it can be carefully accomplished, is a very good one. Instead of "preparing" the tree (this system is not so applicable to very large specimens) its roots are bared to their very points, by stirring the soil in their proximity, in the first instance, with "grapes" or forked spades, and removing it carefully, by gradually forming a trench considerably away from the bole of the tree and around it, as indicated in the former method described, only at a wider circumference, so as to embrace every minute rootlet, and thus gradually working inwards and around, and under the trunk, till all the rootlets and large roots also are relieved and carefully secured, when the tree is at once quickly removed to a large deep and wide pit previously prepared for it, and in which the root-fibres are arranged and disposed very regularly, fresh soil and compost of well-rotted turf being added, and firmly packed till the hole is completely filled up. In this case, secure protection from wind is necessary by using either stays or stakes; and a further security to the stability of the tree, is to splice to its roots long pieces (12 to 20 feet in length) of thick roots, from 2 to 3 inches in diameter, cut from other trees. These, when well earthed up, being buried with the roots of the specimen, act as excellent underground anchors to the tree, and serve to moor the loosened roots more securely in their lateral directions, and enable them to resist the strain of the head against the wind. In every instance after removal, all useless growth of small twigs from the stem should be pruned away, to prevent unnecessary waste of sap being appropriated to their development instead of being

thrown into the nourishment of the head of the tree. Having thus considered the subject of transplanting in general, the season and circumstances best suited for the various species and the many precautionary measures to be observed in the process; and having also glanced at the methods usually employed in removing large specimens, and the sizes most to be recommended for the purpose, it would be improper, before concluding, to omit mentioning the immense success in this department of landscape gardening achieved by the late Sir Henry Seton Stewart, of Allanton (the Evelyn of his day), with the aid of the machinery devised by himself, of which the implements used now-a-days are but slight modifications and improvements. Indeed, of the art of removing, successfully, large trees, and of so "creating real landscape," as he has himself styled it, he may be regarded as the pioneer. Nor need we refer to the labours and improvements upon the previous methods and machinery employed by Brown, the intelligent practical forester, whose name and fame in this department also will be coeval with the existence of his favourite trees. On all sides, where the labours of these two leaders in arboriculture were achieved, their footprints may still be traced in the living monuments of their skill and success—thus placing the art upon well-defined and properly understood principles. Nor should we forget to notice the carefully devised and successfully executed efforts in the same direction of the late Mr. William M'Nab, as evinced in many of the present denizens of the Edinburgh Botanic Garden, several of which were, in 1822, removed, when of large size (many were from 37 to 43 feet in height), from the site of the old Botanic Garden, to the present one, a distance of about a mile and a half! In fact, the machinery as used in some cases nearly half a century ago, must still be the means employed, if trees of very large magnitude are to be removed, or the operations of transplanting are to be carried on upon such a scale as Stewart, Brown, M'Nab, and a few others have pursued. But upon this scale we wish ever to see transplanting exceedingly limited; for, although perfectly successful, the comparative cost of lifting a tree from 30 to 40 feet high, and one of only 6 to 10 feet in height, and their comparative progress afterwards, is upon the one hand of expense too wide, and upon the other of result too close and insignificant to lead to the belief or desire, that very large trees should ever be generally transported from place to place, or that it is economical and advantageous to do so. For immediate landscape effect, no doubt the larger the tree the better, and those who desire to anticipate years of growth and progress must employ such means to attain their object, but they must at the same time make up their minds to the labour and cost of such dearly-bought pleasure, and to the risk of failure to be run in attaining it; while, on the other hand, those who are content with less straining after immediate effect, and merely transplant specimen trees from about 6 to 10 feet in height, will be amply rewarded in a very few years by superior permanence and enduring results in the timber trees they have planted, and by the present satisfaction of witnessing their strong and healthful growth, and rapid progress, as well as by the knowledge of the eventually enhanced value they are conferring upon their estates.—*Transactions of the Scottish Arboricultural Society.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Preserving Timber: L. T. There is no doubt that creosote is the best preservation against Fungus. It is also a capital preservative against the attacks of time on fences and all exposed wood-work.

Arbutus coccinea.—Can anyone tell me where I can obtain a plant of this Arbutus? I am told that it is very handsome. I have A. Crooni, which is now covered with clusters of pretty flowers, that contrast well with the bright green foliage.—J. B., Southampton.

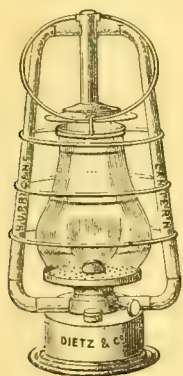
Haws on the Double Scarlet Thorn.—I have a double scarlet Thorn in my nursery bearing Haws almost as freely as the single variety, and they are nearly twice the size of ordinary Haws and rather flattened in shape. Do double-flowered Thorns frequently fruit? I have not heard of them doing so before.—W. RUMSEY, Waltham Cross.

Cistus tauricus.—This is a gem among hardy shrubs. It grows about 1 foot or 18 inches high, and has a neat compact habit. The stems and branches, as well as the leaves, are clothed with short hairs down. The flowers are produced singly on short stalks, and are about 2½ inches across and of a bright rosy-purple. It flowers in June, July, and August. For the margins of shrubberies, or forming beds of rock-Roses in suitable spots, it is one of the handsomest of its class, and there is no more desirable rock-work plant. It is easily increased in autumn by means of cuttings inserted in sandy soil in a cold frame or under a hand-glass.—*The Gardener.*

Raising Seedling Plane Trees: B. S. The following extract from Grigor's "Arboriculture" will help you:—"In Britain, the tree is sometimes grown from seeds, that are produced in round balls, which should be broken, and the seeds sifted, to separate them from the cottony substance with which they are mixed. They should be sown in March. They require scarcely any cover of soil, but should be pressed into the surface of the ground, and kept moist by being covered with leaves or spray of trees. But the most speedy method of propagation is to grow the plants by layers, in a similar manner to that recommended for the Lime tree." The trees planted in London are, for the most part, raised in French nurseries.

LAMPS FOR GARDENERS' USE.

For night-visits to hothouses, the gardener should have good lamps, and therefore we do not hesitate to allude to two which have been sent to us for testing, and which appear to possess uncommon merit. The first is called the Hurricane lamp, which gives an excellent light, and cannot be put out by the strongest wind. It burns brightly and steadily for twenty hours, at a cost of less than a farthing an hour. To those having suburban gardens, with out-houses or stabling, it would seem to be valuable. The other lamp is the Paragon, introduced, like the preceding, by Messrs. Dietz, and is an excellent lamp for ordinary purposes. This was submitted to a careful test with various other good lamps by the editor of the *Field*, and by him declared to be the best lamp he had tried. Not least among the minor advantages of construction in these Paragon lamps is one whereby their durability is greatly extended. Everybody using lamps knows how apt people are, in taking the burners off to get at the reservoir, to injure the pin, so that the toothed wheels cease to act in perfect unison, and are irregular, and thence a wasteful flame results. With this lamp there is no need to remove the burner except when a new wick is wanted—once in five or six weeks. By raising in the flat top of the burner a little trap door, access is at once obtained to the reservoir, which can thus be filled without removing the burner, which consequently lasts much longer, and by shaping its upper edges to a slight convexity the flame is found in practice to be wholly prevented from drawing upwards into long and irregular tongues, as is too common with other lamps. These lamps are suited for burning petroleum or mineral oil, which is obtainable, of excellent quality, at 2s. per gallon. There exists a wholly unfounded prejudice against oil of this kind, which is frequently supposed to be unsafe. No respectable tradesman now sells petroleum whose vapour will take fire under 130° Fahrenheit,



The Hurricane Lamp.



Paragon Lamp.

and as neither of these lamps will raise the oil in their reservoirs, if of glass or china, above 70° or 80° Fahrenheit, even in summer that danger is, with the most ordinary care, absolutely got rid of. When metal reservoirs are employed, some non-conductor should be interposed between them and the burners. Under no ordinary circumstances can petroleum be raised to blood heat, and even at that temperature there is a margin of from 20° to 30° Fahrenheit before it is more liable to combustion than colza oil or any other of our common vegetable oils; while it is not nearly so liable to take fire as brandy, the vapour of which ignites in the same manner at a much lower temperature. The light afforded by the Paragon lamp, we may add, has been satisfactorily proved to equal in brilliancy that of no less than twenty-eight sperm candles.

FLOWER PAINTING AT THE FEMALE SCHOOL OF ART.

It is always interesting to flower lovers and horticulturists to see how the products of their flower beds, and of their flowering shrubs, are treated by those artists who aspire to reproduce their beauties on canvas or paper; and every true lover of floral beauty must have been highly gratified to witness the general success with which the young lady artists of the institution in Queen Square have acquitted themselves in the elegant portraiture of their exquisitely beautiful "sitters," if we may be permitted the use of that somewhat technical term. Most, if not quite all, of the subjects selected and grouped by the lady professors as models for their pupils have been well chosen and placed together with much taste. Among the most ambitious of these essays in flower painting are the

works of Miss A. E. Hopkinson, who has executed, with very considerable skill, a group composed of masses of intermingled Primroses and Blue-bells, on a mossy bank. Her Primroses have the fresh, clear aspect of the first flower of spring; and are beautifully painted, while a branch of Apple, in full bloom, also intermingled with the composition, after a very tasteful fashion, is re-produced with extreme delicacy, and with a bright and sensitive feeling for floral colour. Miss Hopkinson has also a good study from a group of autumn foliage—Blackberry-brambles, with their fruits, and a few sprigs of finely berried Bryony. The tinting of the foliage is gorgeously rendered; and the purple-black of the Blackberry, and scarlet of the Bryony berries, more or less intense in proportion to their ripeness, are executed with an appreciative care that is highly creditable, as bearing testimony to the correct studies by which alone the young artist can have attained her present proficiency. The next composition which attracted my attention was, perhaps, equally good. It was an ambitious group, formed by an entire plant of *Orchis maculata*, a gush of Primrose bloom, and, on the same rooty bank, a thrush's nest, with eggs, seemingly just left there by some juvenile nest-robber, while in pursuit of other depredations of a similar kind. The *Orchis* is boldly and fairly painted in outline, colour and treatment; and the Primroses also, though not quite so good; but the painting of the thrush's nest is not nearly equal to the rest of the picture. Want of cleanness and purity of colour is one of the most common defects of young painters; but Miss Emily Austin, the paintress of this highly meritorious composition, evidently possesses qualities that will rapidly carry her far beyond the more common errors of all beginners. Another composition by this young lady already shows, indeed, that muddiness of tone will not remain a permanent defect in her style. It consists of a group of the more vividly-coloured Fungi, which appear to be growing naturally among Moss and Lichens, and the dazzling scarlet hues of some of them are rendered with very great clearness and brilliancy. Such a composition would make a striking foreground to a large picture. Miss Ellen Hancock has a group of autumn-tinted Ferns, growing on a mass of rock, combined with some autumn foliage, in its livery of crimson, purple, and gold. This is a much better picture than the same young lady's White Lily and *Gladiolus*. Miss Alice Lock has been more fortunate in her treatment of the *Gladiolus*; her selection of five varieties of which has been made to form a good composition, grouped with *Arbutus* branches covered with bloom. A group of brilliant *Pelargoniums*, with *Tournesol* Tulips and white *Spiraea japonica*, and a grand raceme of blue *Wistaria* lying carelessly in front, is also the work of Miss Alice Lock, and must rank among the best compositions in the room; the low baskets of unbarked wicker-work in which the flowers are placed is well treated, and, with a little more crispness and largeness of touch, and a somewhat fuller tone of colour, would have been excellent. Miss Jessie Corcoran has a pretty composition of Wild Roses and other objects, very nicely drawn, and crisply and cleanly painted, with the exception of the eggs in a chaffinch's nest in the foreground; which are far from having all the translucent purity of tone required. Those who recollect Hunt's inimitable nest and eggs, are, perhaps, hard to please. Her separate studies of *Iris*, *Gladiolus*, and *Dielytra*, are exceedingly conscientious, and so far meritorious, and they will have given her a knowledge and power of outline which must become of great advantage to her in future work; but we must remark, that the *Dielytra* has either been painted from a poor specimen, or, the artist has not fully appreciated the robust, yet elegant, luxuriance of the plant, or the proudly bowing habit of its leading racemes of bloom. Among smaller sized compositions, Miss E. Hancock's group of white and rose *Azaleas* and Miss Austin's pretty group of semi-double Blush Roses may be pronounced really beautiful studies, showing that either of these young ladies might at once be safely trusted with the artistic representation of the botanical aspect of plants. In the department for water and chalk drawing, there are several interesting specimens of good work. The nobly sculptured group of the Egg-plant, forming a portion of Ghiberti's marvellous foliaged border, running, in high relief, round the architrave of his famous door of the Baptistery, at Florence, which Michel Angelo pronounced worthy of being the entrance to Paradise, appears to be a favourite model at the female school of art. There are several copies in chalk, all good, but one remarkably excellent. Among the water-colour studies of single flowers, with applications of their leading outlines to ornamental pattern work, many are very successful. The reduction of the main lines of the Snapdragon flower to the purpose of forming a semi-geometrical pattern, is especially ingenious; and the analysis and application of the flower of the Winter Aconite to a similar purpose, perhaps, still more so. But one of the most remarkable drawings in the room, is an outline drawing of some grand sprays of Bramble with its fruit. It is the work of Miss Adelaide Henton, drawn in competition for the Gilchrist scholarship of £50.

WESTBOURNE.

THE MOUNTAINS AND THEIR WORK.

It may not, even at this day, be altogether profitless or unnecessary to review briefly the nature of the three great offices which mountain ranges are appointed to fulfil in order to preserve the health and increase the happiness of mankind. Their first use is, of course, to give motion to water; every fountain and river, from the inch-deep streamlet, that crosses the village lane in trembling clearness, to the massy and silent march of the everlasting multitude of waters in Amazon or Ganges, owes its play, and purity, and power, to the ordained elevations of the earth. Gentle or steep, extended or abrupt, some determined slope of the earth's surface is of course necessary before any wave can so much as overtake one Sedge in its pilgrimage; and how seldom do we enough consider, as we walk beside the margins of our pleasant brooks, how beautiful and wonderful is that ordinance of which every blade of Grass that waves in their clear water is a perpetual sign; that the dew and rain fallen on the face of the earth shall find no resting place—shall find, on the contrary, fixed channels traced for them from the ravines of the central crests down which they roar in sudden ranks of foam to the dark hollows beneath the banks of lowland pasture, round which they must circle slowly among the stems and beneath the leaves of the Lilies; paths prepared for them, by which, at some appointed rate of journey, they must evermore descend, sometimes slowly, sometimes swiftly, but never pausing; the daily portion of the earth they have to glide over marked for them at each successive sunrise, the place which has known them knowing them no more, and the gateways of guarding mountains opened for them in cleft and chasm, none hindering them in their pilgrimage; and, from far off, the great heart of the sea calling them to itself. The second great use of mountains is to maintain a constant change in the currents and nature of the air. Such change would, of course, have been partly caused by differences in soils and vegetation, even if the earth had been level: but to a far less extent than it now is by the chains of hills, which, exposing on one side their masses of rock to the full heat of the sun (increased by the angle at which the rays strike on the slope), and, on the other, casting a soft shadow for leagues over the plains at their feet, divide the earth not only into districts but into climates, and cause perpetual currents of air to traverse their passes and ascend or descend their ravines, altering both the temperature and nature of the air as it passes in a thousand different ways, moistening it with the spray of their waterfalls, sucking it down and beating it hither and thither in the pools of their torrents, closing it within clefts and caves, where the sunbeams never reach, till it is as cold as November mists; then sending it forth again to breathe softly across the slopes of velvet fields, or to be scorched among sunburnt shales and grassless crags; then drawing it back in moaning swirls through clefts of ice and up into dewy wreaths above the snow-fields; then piercing it with strange electric darts and flashes of mountain fire, and tossing it high in fantastic storm clouds, as the dried Grass is tossed by the mower, only suffering it to depart at last when chastened and pure, to refresh the faded air of the far off plains. The third great use of mountains is to cause perpetual change in the soils of the earth. Without such provision the ground under cultivation would, in a series of years, become exhausted, and require to be upturned laboriously by the hand of man; but the elevations of the earth's surface provide for it a perpetual renovation. The higher mountains suffer their summits to be broken into fragments and to be cast down in sheets of massy rock, full, as we shall see presently, of every substance necessary for the nourishment of plants; these fallen fragments are again broken by frost and ground by torrents into various conditions of sand and clay—materials which are distributed perpetually by the streams farther and farther from the mountain's base. Every shower which swells the rivulets enables their waters to carry certain portions of earth into new positions, and exposes new banks of ground to be mined in their turn. That turbid foaming of the angry water—that tearing down of bank and rock along the flanks of its fury—are no disturbances of the kind course of Nature; they are beneficent operations of laws necessary to the existence of man and to the beauty of the earth. The process is continued more gently, but not less effectively, over all the surface of the lower undulating country; and each filtering thread of summer rain, which trickles through the short turf of the uplands, is bearing its own appointed burden of earth to be thrown down on some new natural garden in the dingles below. And it is not, in reality, a degrading but a true, large, and ennobling view of the mountain ranges of the world if we compare them to heaps of fertile and fresh earth, laid up by a prudent gardener beside his garden beds, whence, at intervals, he casts on them some scattering of new and virgin ground. That which we so often lament as convulsion or destruction is nothing else than the momentary shaking of the dust from the spade. The winter floods, which inflict a temporary devastation, bear with them the elements of succeeding

fertility; the fruitful field is covered with sand and shingle in momentary judgment, but in enduring mercy; and the great river, which chokes its mouth with marsh, and tosses terror along its shore, is but scattering the seeds of the harvests of futurity, and preparing the seats of unborn generations. I have not spoken of the local and peculiar utilities of mountains; I do not count the benefit of the supply of summer-streams from the moors of the higher ranges—of the various medicinal plants which are nested among their rocks; of the delicate pasturage which they furnish for cattle; * of the forests in which they bear timber for shipping; the stones they supply for building, or the ores of metal which they collect into spots open to discovery, and easy for working. All these benefits are of a secondary or a limited nature. But the three great functions which I have just described, those of giving motion and change to water, air, and earth, are indispensable to human existence. They are operations to be regarded with as full a depth of gratitude as the laws which bid the tree bear fruit, or the seed multiply itself in the earth. And thus those desolate and threatening ranges of dark mountains—which, in nearly all ages of the world, men have looked upon with aversion or with terror, and shrunk back from as if they were haunted by perpetual images of death—are, in reality, sources of life and happiness far fuller and more beneficent than all the bright fruitfulness of the plain. The valleys only feed; the mountains feed, and guard, and strengthen us. We take our ideas of fearfulness and sublimity, alternately, from the mountains and the sea, but we associate them unjustly. The sea wave, with all its beneficence, is yet devouring and terrible; but the silent wave of the blue mountain is lifted towards heaven in a stillness of perpetual mercy.

RUSKIN.

USES AND DISTRIBUTION OF THE POKEBERRY.

(PHYTOLACCA DECANDRA.)

THIS is believed to have various important medicinal properties, and its ripe berries are used, or said to be used, for colouring wines—a property which De Candolle seems jocularly to hesitate whether to reckon as an evil or a good; for, as he says, if it is hurtful to the purchaser, it is profitable to the seller. Its leaves are extremely acrid; but the young shoots lose this property by boiling in water, and are eaten in the United States as Asparagus, and in soup in Russia. It is by some considered likely to be very useful as a covert plant, as pheasants are said to be fond of the berries. It is also a vigorous perennial, desirable for grouping with the stouter herbaceous plants. It is a plant of some importance in gardens, and therefore the following interesting notes, communicated by Mr. Andrew Murray to the *Field*, may have some interest for our readers. It is an American plant, like all the species of *Phytolacca*, but it is also met with in the Old World, and more familiarly in the south of Europe, where it is supposed to have been introduced. De Candolle gives, in his "Géographie Botanique" (p. 736) the following account of its distribution:

Origin, North and South America. It is said to have been imported into the south of Europe some 200 years ago, and that it was cultivated for the purpose of colouring the Bordeaux wines, and also in the gardens of the convents. M. Moquin writes me; "Herborising, in 1843, in the Western Pyrenees, I found several plants of that species in a locality almost desert. But the peasants showed me, at a short distance, the ruins of a convent." Barrelier had seen it in Europe about the year 1650, but he does not say whether it was cultivated or spontaneous. Ray, in 1693, and Linnaeus do not speak of it but as an exotic, cultivated. The name of American Grape, which it bears, confirms this. It is not possible that so remarkable a species could have been passed over by the old botanists. Gouan indicated it as spontaneous near Narbonne in 1765, Haller in the north of Italy in 1768, and a little later Allioni called it wide-spread. The names of "Uva turca" or "di Spagna," given to it in Italy, suggest that the plant might have spread at first through Barbary or Spain. In 1785 Sibthorp doubted whether or not it was really spontaneous in Greece. It has spread since as far as the inhabited places in the mountains of Armenia (C. Koch, Linn. xxi., 736).

Such was the state of our knowledge up to a few months ago. If it is really an introduced plant from America, it stands in a very restricted category, there being only three other American plants which have become at all widely spread by naturalisation in Europe, viz., the *Opuntia Ficus-Indica*, and *Amarantus albus* in the south, and *Erigeron canadense* in south and mid Europe. The question of its naturalisation has, however, had fresh light thrown upon it lately by M. Jean Van Volxem, of Brussels. That gentleman attended the floral festivities at St. Petersburg in 1869, and, with his old spirit of travel, extended his excursion to the Caucasus. He there met with the *Phytolacca decandra* under conditions which seemed to him more indicative of a spontaneous origin than of naturalisation. On his

* The highest pasturages (at least, so say the Savoyards) being always the best and richest

return he privately mentioned the fact to me, knowing I was interested in questions of geographical distribution. Since then he has received some additional information, which he communicated to the *Belgique Horticole* in a short notice in July last. He there says:

I have received from a correspondent in the Caucasus, M. Mlokosievitch, a rather interesting note for geographical botany. In a letter which I wrote him in 1870, I told him incidentally that I had been surprised to find, very abundantly, in the depths of the forest of Kakhetie, the true *Phytolacca decandra*, which we call "Raisinier d'Amérique," and which we consider a native of the New World. He writes me an answer, that "the *Phytolacca decandra* is called in Lesghien *Tcho-tcho-baha*. The Lesghes say that it existed in the country before them. They infuse a morsel of its roots in water for twenty-four hours, and take some drops of that infusion, which is as good a cure for fever as quinine. It stops nausea, and even vomiting. The Armenians make spirits of wine of its fruit. The Georgians call it 'Imerouli saperawi,' and employ it as you tell me they do in the south of France, to give a fine colour to red wine. The Russians call it 'Paupiros' (without doubt a corruption of the Georgian name), and use the young shoots when about a foot in height to make their national soup called *Borszez* (a kind of green soup). I think that, if this plant was a native of America, the people of the Caucasus, still so little advanced in civilisation, would not each of them have given it a different name, nor found so many different uses for it."

Mr. Van Volxem concludes by reminding the reader that the Lesghiens or Avars inhabit Daghestan on the north flank of the Caucasus, while the Georgians occupy Kakhetie on its south flank. This notice has brought out yet another interesting contribution to the history of this plant from the pen of M. Alphonse De Candolle. It appears in the December number of the *Belgique Horticole*, and is as follows:

At the very moment when I was reading the interesting article of M. Van Volxem in the *Belgique Horticole*, on the origin of *Phytolacca decandra*, I received from the interior of China a very curious opusculum which supports the view of the Asiatic origin, or more precisely of a great antiquity on the Asiatic continent, of that American species. M. Karl Koch found it in the inhabited parts of the Caucasus, and of the mountains of Armenia. As its berries are probably transported by birds, and the species in any case has spread rapidly throughout the south of Europe since the discovery of America, I had thought that the plants observed in the Caucasian region were the result of no very ancient transport.

If I may interrupt the passage here, I would wish the reader to observe that I have above given, in my quotation from the "Geog. Bot." of M. De Candolle, all the grounds on which he considers it proved that the plant spread rapidly in the south of Europe after the discovery of America; and he will remark that they are all negative, and resolve themselves very much into this, that the plant is not noticed by the more ancient botanists, while it is said by those who wrote about the middle and end of the seventeenth century to be then widely spread. M. De Candolle goes on as follows:

M. Mlokosievitch, in citing the names of the Lesghien and Georgian languages, furnishes an argument in favour of an Asiatic origin. It would, nevertheless, be singular that a species so fitted for rapid extension should have remained in Asia without spreading itself into the south of Europe before the discovery of America. Its nativity in the New World is, moreover, not in the least disputable; and, as there are very few phanerogamous plants common to the temperate regions of the Old and New World, we must rather suppose an already ancient extension from America into Asia. The Chinese documents would support this view. The work of which I speak has been published at Foochow in 1870 by Dr. Bretschneider, physician to the Russian legation at Peking. It is an opusculum, in 8vo, of fifty-one pages with seven double plates, done in English, and entitled "On the study and value of Chinese Botanical works, with notes on the history of plants," &c. The author has replied in a very happy manner to the demand that I had made in my "Géographie Botanique," that the ancient Chinese works should be studied to ascertain the presence in the Empire of China of certain species, spontaneous or cultivated, from a very remote epoch. The information which he gives from works, the oldest of which goes back to the year 2700 before Christ, generally confirms what the other indications had led me to presume regarding the origin of several species. As regards *Phytolacca* there is an interesting observation. The *Materia Medica* of the Emperor Shenlung, of the year 2700 n. c., contains a figure and a description of a true *Phytolacca*, of which it is impossible to say whether it is the *decandra* or the *octandra*. Both are cultivated at Peking, and the roots are employed medicinally by the Chinese. The ancient name is "Shunglu." It may be that the species has been transported by birds from North America or the Sandwich Isles, where Meyen found it, into China at a very ancient epoch, and that from thence it has spread itself from the East to the West, towards the Caucasus; while its introduction from America to Europe would be made later. All the species of *Phytolacca* being American, this hypothesis appears reasonable.—*Belg. Hort.* 1871, p. 354.

It is very probable that in regard to this particular species M. De Candolle's explanation of the mode of its occurrence in both the Old and the New World may be correct; but we must bear in mind that other closely allied plants and animals occur in both, whose presence cannot be so easily explained, and for which, as it appears to many, nothing but former continuity of land, in some point or other, can account.

THE HOUSEHOLD.

Grape Jelly.—Put the Grapes in a jelly pan with a very little water; simmer on the fire till quite soft; then strain through a colander or flannel bag; when the juice is all run out, measure, and allow fully one pound of loaf sugar to every pint of juice; boil till it jellies; when it has boiled twenty minutes, try a little in a saucer. It should be watched for fear of boiling over.

Apples and Tapioca.—Peel four or six good-sized Apples, take out the core, and fill up the cavity with sugar and powdered cinnamon, putting a small piece of butter on the top of each. Place them in a baking dish, and strew round them about a cupful of tapioca (raw) mixed with sugar and some grated Lemon rind; fill the dish with water, and put in a gentle oven until both Apples and tapioca are done.

Apple Snowballs.—Pick and wash well $\frac{3}{4}$ lb. of rice, boil it in plenty of water for a quarter of an hour, then drain and let it cool. Pare and core (but without dividing them) half-a-dozen large Apples, enclose them in the rice separately, tie them in small cloths made the proper size, and boil them for one hour; when eaten, a little butter and sugar will improve them.

Apple Ginger.—To 4 lb. of Apples have 4 lb. of sugar, one quart of water, and 2 oz. of best essence of ginger. First pare the fruit, cutting out every particle of core; then shape it to resemble the small kind of preserved ginger. Boil the sugar and water nearly twenty-five minutes until it is a nice syrup, then put in the Apples; be sure not to stir them much; add the essence of ginger (if 2 oz. be not sufficient, add more). It will take nearly an hour to boil, until it becomes yellow and transparent. There will be some pieces that will not clear; put them by themselves, as they will spoil the look of the rest. It will require skimming. American or Ribston Pippins are best.

German Apple Pudding.—Butter a pie-dish, and lay in it a layer of bread crumbs, then a layer of good cooking Apples pared and quartered, then a layer of good brown sugar, then a very thin layer of finely-chopped suet or little bits of butter, then a layer of bread crumbs, and so on until the dish is filled, taking care to have crumbs at the top. Bake the pudding in a moderate oven for three quarters of an hour. Before serving, sift sugar on the top.

Tansy Pudding, Baked.—Beat four ounces of blanched Almonds very fine in a mortar; add a little Orange-flower water to prevent its oiling. Pour a pint of boiling hot cream upon a sliced French roll; whisk four eggs, mix them with some sugar, a little grated nutmeg, a glass of brandy, and a very small quantity of Tansy and Spinach juice to give it a green colour. Beat a quarter of a pound of butter to a cream, add the Almonds, roll, and other ingredients well mixed together. Beat them for five minutes, lay the mixture in a tart-dish edged with a rim of very light paste, cover it with a top crust, and bake for forty minutes.

Cocoa-nut Pudding.—Break the shell of a moderate-sized Cocoa-nut, so as to leave the Nut as whole as possible. Grate it after removing the brown skin, mix it with 3 ounces of powdered loaf sugar and half-an-ounce of Lemon peel, and add two eggs well beaten. Mix the whole with milk, and put it into a tin lined with puff paste. Bake it a light brown.

Tomato Ketchup.—When Tomatoes are very ripe, slice them and put a layer into a jar; sprinkle salt over it, and lay in another layer; do this till the jar is full; stir them now and then for three days, and let the jar stand in a warm place; they must then remain for twelve days without being stirred, and a thick scum having gathered over them, squeeze the juice from the Tomatoes, and boil it with the same proportion of spice that is allowed for Mushroom ketchup; when cold, bottle it, and seal the corks. In three months strain and boil it again with fresh spice. It will then keep good a twelvemonth.

Cooking "Greens."—Every housewife thinks she can cook "Greens." It is the simplest of all dishes; and yet, in most cases, they are not well served, for much depends upon the manner in which they are boiled. The water should be soft, and a tablespoonful of salt added to a large-sized pot of it, which should be boiling hot when the Greens are thrown in; and then it should be kept on the boiling gallop, but uncovered, until they are done, which can be told by their sinking to the bottom of the pot, and they should be skimmed out as quickly as possible into a colander, so that all the water will run out. Press them with a small plate, then turn upon a platter, add a large piece of butter, and cut up fine. Serve while smoking hot.

Potatoes a la Duchesse.—The following is the receipt of a good cook in a private family in Paris:—Take five middle-sized cold boiled Potatoes, grate and mix them with five dessert-spoonfuls of flour and a half-penny worth of milk, adding to the mixture two eggs well beaten up; prepare a pauf of boiling fat, and drop spoonfuls of the paste into the fat, taking them out the instant they have acquired a delicate golden brown colour. With moderate care Potatoes thus cooked are delicious.

FRUITING OF THE MANGO IN PORTUGAL.

HIS Majesty King Don Fernando, a year ago, had a few plants of *Mangifera indica* planted out of doors in his garden at Necessidades; these plants looked pretty well last spring, nevertheless I must confess that I did not expect much good would result from them. During the King's absence from Lisbon for the summer months, I paid but one or two visits to this charming spot, then suffering much from excess of drought, and, to tell the truth, I completely lost sight of his Majesty's favourites, the famous Mango trees. The greater was my astonishment when Don Fernando informed me, the other day, that one of them was in full fruit, and this astonishment certainly did not decrease when I looked at this phenomenon with my own eyes. The fruiting plant is apparently quite young, not over three or four years of age, showing a height of $1\frac{1}{2}$ metres, more or less, and it bears nine oval-shaped fruits of a duck's-egg size. Being well sheltered against rainy and stormy weather, and not having anything to fear from frost, or even cold, I dare to hope that his Majesty will soon have the pleasure of seeing a dish of ripe Mangoes on his dining table. That Mangoes fruit and ripen very often in Madeira, and even in St. Michael's, is commonly known; but in Continental Europe I believe it will be the first time that such an event has taken place. The Mango has fruited already in one of the stoves of Syon House, if I am not much mistaken, but here, in Necessidades Gardens the tree has developed its fruits under the blue but arid sky of Lisbon, and this deserves well to be reported, with large letters, in the annals of horticulture, as it gives us a new proof of what great success acclimatisation, skilfully managed, may obtain in some of the most favoured spots of southern Europe.

The introduction of the Abyssinian *Musa Ensete* was certainly one of the finest gifts which European gardens have, of late, obtained from foreign countries. A great many of our readers will remember the beautiful specimen of it, which, for many years, was one of the chief ornaments in the Palm-stove at Kew, its leaves being upwards of 20 feet long, and traversed by a stout vivid red rib, while the trunk attained a circumference of 9 feet in three years. But, though this plant may be destined to make one of the most remarkable features in the larger conservatories of northern countries, I incline to believe that its singular beauty will still be far more appreciated in the sunny south. Only a few months ago the King, Don Fernando, had a young *Musa Ensete* planted out in his gardens, and it is quite wonderful to see what dimensions it has reached in this short time. It measures already 4 metres in height, with a stem of about 4 feet in circumference, and leaves of 10 feet in length, more or less. Meeting with all necessary facilities for a vigorous growth, it will, I dare say, soon make one of the finest specimens of its kind in Europe.

Before concluding, I should like to draw attention to a splendid *Cocos australis*, which, though it is one of the most majestic Palms in these gardens, was unfortunately forgotten in my first report, and certainly his Majesty was quite right to complain of this omission. Its quite erect trunk of 2 feet in circumference measures from 40 to 50 feet in length, bearing at its top a profusion of dark-coloured leaves. If Necessidades Gardens excel in beautiful Monocotyledons, those of Penna, with the damp atmosphere of the Cintra Mountains, show other not less attractive features of the vegetable kingdom. Large collections of rare Coniferæ, Australian Myrtaceæ, Camellias, Rhododendrons, and Azaleas, and especially of strong and healthy Tree-Ferns abound here; and, when I paid a visit to this charming spot, it was difficult for me to decide whether to give the preference to these rare exotic plants, or to the dense thickets of Oaks and Beeches, which reminded me of "dear home."

EDMUND GOEZE.

Lisbon.

The Royal Berks Root Show.—At Messrs. Sutton's root show, which took place on the 21st inst., Mr. Goodey, gardener to C. R. Littledale, Esq., of Scarlett's Park, Twyford, Berks, exhibited an enormous round Squash, of a dull buff-yellow colour, and handsomely netted, measuring about $7\frac{1}{2}$ feet in circumference, and weighing 168 lbs. At the same exhibition, Mr. Tegg, gardener to Mr. Walter, M.P., was awarded a handsome silver cup for a superb collection of twelve varieties of vegetables of first-rate quality, and neatly arranged. The second prize was won by Mr. Higgs, gardener to Mrs. Crawshaw, of Caversham Park, Reading; and the third by a well-known grower, Mr. Pragnell, of Sherborne Castle. Of Potatoes no fewer than twenty-three collections were exhibited, the silver cup offered for which was awarded to Mr. W. Wildsmith, gardener to Lord Eversley; Mr. McKinlay, of Beckenham, Mr. Higgs, of Caversham, and Mr. Johnstone, of Savernake taking prizes in the order in which their names stand. The competition for twelve tubers of Red-skin Flour-ball was remarkable; nearly fifty dishes being exhibited, some of which were of great size, the twelve largest weighing about 26 lbs. The first prize in this class was awarded to Mr. Stollery, Railway Inn, Staines, his twelve being the handsomest of the kind

we have yet seen. Among other garden produce there were shown some magnificent examples of the Reading Onion, Intermediate Carrots, and Student Parsnips, the exhibition altogether being full of interest and a most complete success.

Messrs. Carter's Root Show.—This took place this year in the Agricultural Hall, which contained a magnificent display of Mangolds, Swedes, Turnips, Potatoes, and numerous other kinds of roots, contributed from all parts of the kingdom, the whole of the articles having been grown from seed supplied by Messrs. Carter. The specimens shown were marvellous examples of what can be produced with good cultivation even during an unfavourable season. The exhibition being wholly of an agricultural character precludes our noticing it in detail. We may, however, say that the specimens of Carter's long red and Carter's Warden globe Mangolds were the largest and most symmetrical we have hitherto met with of these deservedly popular varieties. Although the Turnip entries were not so numerous as the Mangold, yet the classes were well represented, the roots of Carter's Purple-top Mammoth being exceptionally good. All the other classes were also well represented, and the show altogether was most interesting and attractive.

Passe Colmar Pear.—I notice that Mr. Ingram (see p. 474) mentions that this Pear does not deserve all that has been said in its favour. Permit me to say I have grown it both in the midland counties and in the sunny south, and a thirty years' experience of it enables me to bear testimony to its exquisite flavour; and I make bold to say that, after much experience at Arundel, where there is one of the best private collections of Pears grown, and afterwards at dear old Chiswick, where there used to be such a collection as was nowhere else to be found, *Passe Colmar*, taking all its qualities into account, is the best Pear extant; but, to develop its highest qualities, it must be grown on a wall.—R. GILBERT.

A NEW "LEGEND OF THE FORGET-ME-NOT."

WHEN Psyche lost her Lord, the Lord of Love,
Weeping alone she wandered,
Listless by every well-known field and grove,
And on her lost Love pondered.

Lastly by Lethe's stream her footsteps strayed;
And "Oh!" she said, in sighing,
"That I might dip, and my past life be made
Like dreams with daylight dying!"

The big tears from her blue eyes raining down
Fell on earth's pitying bosom:

Sudden there sprang amid the Sedges brown
Blue as her eyes a blossom.

And o'er her head, soft rustling sweet and low,
As though some bird's wing fluttered,
In those loved tones whose loss was all her woe,
"Forget-me-not!" was uttered.

No more: no sight, no touch: these words alone:
And "Ah!" she cried, "forget thee?"

Nay, but half Love in our glad life was known;
Half Love to regret thee.

"Forget thee? Nay, these flowers my tears begot
Shall be to me a token

Of Love: they shall be called Forget-me-not,
The name to cheer me spoken."

So well, sweet river-flowers, we welcome you,
Earth with faint sadness scenting,—

Born of the tears from Psyche's eyes of blue,
For her lost Love lamenting.

—Spectator.

PERSONAL.

THERE is a portrait, in the last issue of *Moore's Rural*, of Mr. William Saunders, superintendent of the State Horticultural Garden at Washington, an able horticulturist, and the founder of the remarkable new "Grange" movement in America. Mr. Saunders was elected the first master of the National Grange, which was organised at his office at Washington on the 4th of December, 1867. About the 1st of January, 1868, he issued a circular, "explaining very clearly and forcibly the considerations which had led to the formation of the Order, and its purposes and aims." This circular was widely distributed among cultivators, and undoubtedly exercised great influence, by imparting information concerning its principles and objects, in securing the establishment of the Order and its subsequent remarkable success.—We hear that Mr. James Smith, late of Exton Park, Rutlandshire, is leaving the management of the gardens of Lord Dartmouth, at Patshull, Wolverhampton.—The annual *soiree* of the workmen in the employ of Messrs. Sutton, of Reading, took place on Monday of last week. A dinner, songs, and recitations were the chief features of the entertainment.—Mr. Thomas Simpson, who, for eight years, has been gardener at Broomfield Lodge, Chelmsford, retires from the management of that establishment at the beginning of next year, and will commence business as a garden architect and market gardener, at St. John's Nursery, Chelmsford.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

POLLARDING TREES IN SMALL GARDENS.

POLLARDING, or severely cutting in the branches of trees, is not a practice to be generally recommended; still there are instances in which it is found to be absolutely necessary. In many suburban villa gardens the originally planted hardwood trees, such as Oak, Ash, Elm, Beech, Lime, Horse Chestnut, &c., have been allowed to go on increasing for a series of years, frequently interfering with each other, and often rendering such gardens close and unpleasant; nevertheless no reason, however urgent, will induce the proprietor to allow any of them to be removed, perhaps owing to all of them being finely developed specimens. This is a feeling with which I fully sympathise; but for the consolation of those who, from dire necessity, have to part with such specimens, I would offer the following observations. A case has recently come under my notice where some large hardwooded trees standing near a boundary wall, with their tops overhanging a public road, had from necessity to be reduced or removed altogether; reduction was finally resolved on, and carried out during the winter of 1871. The chief trees operated on were Ash, Beech, Wych Elm, and Horse Chestnut. All were wide-spreading trees, and between 40 and 50 feet in height. The largest specimens, at 3 feet above the ground, measured in circumference as follows: Ash, 6 feet; Beech, 5 feet 4 inches; Elm, 8 feet 5 inches; and the Horse Chestnut, 5 feet 5 inches. All were cut down to within 18 or 20 feet from the ground, and portions of the main branches, averaging in length from 3 to 4 feet, were left in such a manner as to give the denuded trees a regular outline; they were then carefully operated upon according to the strictest rules of forestry as regards ornamental trees, all sloping cuts being smoothed and darkened over. During the first year after the operation, standing as they do side by side, they certainly presented, as might be expected, a somewhat bare appearance, which would not have been so much the case if only alternate specimens could have been operated on. After the first year, however, they annually improved, so that now their appearance is really pleasing to the eye, the stumps of the branches left being clothed with numerous young and healthy twigs. During the first year, the Ash made growths 4 feet long, during the second 3 to 4 feet, and during the third about 2 feet. The Elm made from 2 to 3 feet during the first year, 3 to 4 feet during the second, and from 4 to 5 feet during the third. In the case of the Wych Elm it is necessary, in order to secure a tree with a good outline, occasionally to prune in a little the strongest of the newly-made branches, without which it is apt to have a few of its leaders taking a somewhat horizontal direction, to the detriment of the others. The Horse Chestnut averaged growths about 2 feet long during the first year, from 2 to 3 feet during the second, and about 2 feet during the third. The Beech made about 3 feet growth during the first year, but by no means numerous, 1 to 2 feet during the second, and 18 inches during the third. I was rather surprised to see the Beech tree putting out any young twigs at all, as it generally does so with reluctance. It made its largest growths during the first year, a circumstance probably owing to the existence of extra sap then in the stem, the after-growth being much smaller. After the trees had been cut over, and the branches removed, all ought to have received a good coating of fresh soil over the surface of the roots. This would have been the means of greatly improving them, particularly the Beech; indeed, every tree and shrub, when pruned down and reduced, ought to be thus treated, more particularly large evergreen shrubs, which in many cases die from the want of this necessary precaution. This is often observable in the case of large Portugal Laurels, Hollies, and Yews, as, owing to their closeness, the roots are generally near the surface, and liable to be injured by frost or exposure to the sun. I may also remark here that as the bark of the Beech

tree is of rather a hard dry character, it would be much in its favour, after being headed down, to have the stems occasionally syringed, particularly if the weather is at all dry and warm. Although the particular trees alluded to have only been three years cut in, when in foliage, they certainly have, as has just been stated, a very good appearance which warrant our recommending the practice in places where trees would otherwise require to be altogether removed; in some situations, too, only every alternate tree bordering a property would require to be thus pollarded. In the case of Elm trees standing within a boundary wall, I have recommended each alternate tree to be pollarded, and branch-pruned as described, and the result in all cases, where attention has afterwards been paid to them, has been satisfactory, the pollarded specimens filling up in a creditable manner the spaces between the branches of those left untouched. The Lime tree, even when of large size, stands with impunity "topping," and branch cutting, and the Ash, English Elm, Poplar, and Willow, I have often seen so treated and with success. It is well known that the Beech, in a young state, will stand any amount of cutting; but I never recommended large Beeches to be so treated till I observed the progress made by the one referred to. My object in making these remarks is to point out to those individuals who are unnecessarily scrupulous about the thinning of outside trees, that if they can put up with the somewhat bare appearance of them for a short time, such pruned trees in a year or two, if properly cared for, become quite as ornamental even at forty or fifty years of age, as they were when only twenty years old.

Royal Botanic Gardens, Edinburgh.

JAMES M'NAB.

DECEMBER FLOWERS IN THE ISLE OF WIGHT.

I PICKED a nosegay this morning in the open air, which seems to me such a strange one for the time of year that I think the best thing I can do with it is to send it to you. It will show you how we can cheat the winter in the Isle of Wight. It is not too much to say that representative plants of every month in the year are in bloom in my garden at this time. I should say that I am indebted to the kindness of Sir William Hutt for the first seven I send you, and to Mr. Gassiot, of St. John's House for about as many more. Sir W. Hutt's garden at Apley Towers will soon be one of the finest in the south of England, and he is making some experiments with flowers and shrubs that are of the utmost interest to every one who cares for them at all. The *Lapageria rosea*, which he has planted against a wall with a west aspect, has at this moment more than 200 blossoms on it. They are such as those which I have sent to you, and nothing could be more beautiful than they are. Also, *Cassia corymbosa* is still most beautiful with him. I am told by Mr. Ellacombe that this fine shrub is very common in Paris in the summer, but it is quite a new thing with us to see it out here in all its glory in mid-winter. If it had not been for the slugs I could have added a fine specimen of *Iris nudicaulis* in the list. *Iris stylosa* has been a kind of harbinger of spring before its time. A deluge of rain which we have had during the last two or three days has done a great deal of damage to our flowers; they were looking much better before it came. *Primula japonica* was in very good form a few days ago. *Stokesia cyanea* is the only one of the flowers I send to you that has not come directly from the open ground. The climate here does everything for us."—W. EWBANK, *St. John's, Ryde.*

[The nosegay alluded to was composed of the following materials, all so finely in flower as to more resemble May than December, viz.:—*Arbutum* Duc de Malakoff, *Desfontainia spinosa*, *Cassia corymbosa*, *Lapageria rosea*, *Pimelea Hendersoni*, *Daphne* (two sorts), *Polygala Dalmatiana*, *Iris stylosa*, *Berberis Darwinii*, *Roses* (*Banksian* and other sorts), *Convolvulus mauritanicus*, *C. Cneorum*, *Iberis gibraltarica*, *Lithospermum prostratum*, *Erica carnea* (and two other sorts), *Clarkia*, *Armeria formosa*, *Achillea aurea*, *Clematis Jackmani*, *Pentstemon* (two or three sorts), *Gazania splendens*, *Dianthus superbus*, *D. hybridus*, *Stokesia cyanea*, *Fuchsia* (three sorts), *Veronica* (two or three sorts), *Erigeron speciosus*, *Anemone coronaria*, *Hypericum calycinum*, *Othonna cheirifolia*, *Lardizabala biternata*, *Schizostylis coccinea*, *Alstroemeria psittacina*, *Hydrangea*, *Helleborus niger* (just coming out), *H. olympicus*, *Salvia fulgens*, *Coronilla glauca*, tree *Carnation*, *Cyclamen Coum*, *C. Atkinsii*, *Mesembryanthemum*, *Lonicera sempervirens*, *Jasminum revolutum*, *J. nudiflorum*, *Ajuga reptans*, *Linum flavum*, *Calceolaria*, *Violet* (*Neapolitan* and *Russian*), *Sedum Anacampseros*, *Cheiranthus Cheiri*, *Primula japonica*, *Sapiglossis*, *Coreopsis*, *Vinca major*, *Mignonette*, and *Escallonia macrantha*.]

NOTES OF THE WEEK.

— DR. McNAB is at present forming a British Herbarium at the Royal College of Science, Dublin, and would be glad if any friends would assist him by donations of rare or critical species.

— M. VAN HULLE, of Brussels, states that they grow *Nasturtiums* in Belgian Apple orchards and let them climb up the trees to keep off the American Blight. Also, Tomatoes are planted among the Grape Vines to keep off wasps; it is said that they do so effectually.

— WE understand that Dr. Boswell Syme is at work on the British Ferns, for an additional volume of "English Botany." A supplement is also in preparation, to include the additions to the Phanerogamic flora of Britain, which have been made during and since the publication of the eleven volumes of the book.

— WALNUT trees sometimes attain prodigious size and great age. An Italian architect mentions having seen at St. Nicholas, in Lorraine, a single plank of the wood of the Walnut 25 feet wide, upon which the Emperor, Frederick III., had given a sumptuous banquet. In the Baidar Valley, near Balaklava, in the Crimea, stands a Walnut tree at least 1,000 years old. It yields annually from 80,000 to 100,000 nuts, and belongs to five Tartar families, who share its produce equally.

— At a recent meeting of the Linnean Society, Mr. D. Hanbury exhibited dried specimens of a Rose raised from seed received direct from the country where the attar of Roses is produced, as the species from which this perfume is obtained. Mr. Baker pronounced it to be *Rosa gallica* var. *damascena*, the monthly Rose, belonging to the *Centifolia* group, thus confirming previous conjectures on this point. It appears, however, that several varieties are cultivated for this purpose.

— A PRETTY Grape Hyacinth (*Botryanthus pallens*) is now in flower in the York Nurseries; its flowers are pale blue, and the spike somewhat lax, compared with that of *Botryanthus paradoxus*, which is growing beside it, and which is a winter-blooming kind. The spike of *B. paradoxus* is said to be short and thick, the flowers being densely packed, and of a dark rich blue. It may be added that these two Grape Hyacinths keep green all through the winter months, a circumstance which gives them a cheerful appearance.

— THE volume of the *Botanical Magazine*, just completed, is, we observe, dedicated to Mr. Maw, of Benthall Hall, Broseley, as a tribute to the value of his exertions in introducing hardy herbaceous plants into English gardens. "No one," says Dr. Hooker, "of late years, or perhaps ever, has collected with his own hands so many of these for transmission to England, cultivated them with more success, or distributed them with more liberality—as the pages of this work to some small extent testify." No one better deserves such a compliment, a fact to which our own pages also bear witness.

— IN an able article in the current number of the *Fortnightly Review*, Professor Clifford defines science as "organised common sense." We commend the fact to those who, presuming on technical acquirements, divide humanity into two great groups—scientific and not scientific. We need not add in which group they place themselves. Another writer, in the *Pall Mall Gazette* of the 1st December, says, "I expressly use the word 'scientific' as equivalent to 'reasonable, intelligible, and consistent.' But if the use of the word science should turn out to be so liable to misapprehension as some appear to consider it, and if people are found to persist in thinking that one means something opposed to instead of identical with common sense, I should be quite willing, as a matter of temporary convenience, to do without it." It would appear that the true view of the case, long ago clearly enough laid down by thinkers, is becoming more widely spread.

— LARGE tracts of land in the south of France, which have not hitherto repaid cultivation, are now being planted with the kind of Oak trees beneath which Truffles are generally found, and it is expected that each acre of this land, which has of late been sold for as little as £5, will yield a crop of Truffles worth £20 every year. The experiment has already been tried in the department of the Vaucluse, and, according to the *Pall Mall Gazette*, in the course of the last twenty years 150,000 acres which were absolutely unproductive have been planted out, and are now yielding a rich return. The cost of plantation, which is borne by the different communes, does not exceed 20 francs per acre on hilly ground, and though it is rather greater in the lowlands, the crops are proportionately heavier. Acorns only are planted on the hilly ground, but saplings of five or six years' growth, placed in rows about 40 feet apart, are found to answer best in the lowlands. The ground between each row of trees is planted with Vines, which, after five or six years, suffice to repay the cost of the whole plantation and its culture. It is urged that this experiment, applied to the large tracts of land in the south of France

which have been denuded of forests, would have the double advantage of increasing the supply of Truffles, and of replacing the forests, the want of which is very much felt.

— M. VAN HULLE, of Ghent, has lately received seeds of a Water Lily, described as even finer than the *Victoria regia*. The seeds were derived from Paraguay. What the merit of the plant really is has yet to be proved.

— THE present Council of the Royal Horticultural Society is wisely endeavouring to increase its usefulness, and one means by which they hope to do this is to hold meetings during the long winter and spring evenings, at which popular and scientific lectures will be given. A committee has been appointed to carry out this scheme, which, if well conducted, will doubtless prove successful.

— THE current number of the *Florist* contains coloured plates of *Rhododendron* Vauban, a delicate lilac variety, the upper segments of which are blotched with orange-yellow; and *Prince Englebert Plum*, a deep purple variety, covered profusely with bloom. It is a kind that is largely cultivated by Mr. Dancer, and other growers, for market, and this is, perhaps, as good a test of its merit as could be had.

— DR. PFEIFFER's new "Nomenclator Botanicus" is, according to the *Journal of Botany*, near completion. Its arrangement is alphabetical, and under every name the citations are put in historical order. In separate paragraphs are placed together those authors who agree in opinion as to the position of the particular group, with the addition of the opinion itself. This affords a well-arranged view of the transformations which the system in general, as well as each single group, have experienced in course of time. The historical literary section is the most valuable part of the work of Pfeiffer. The remarks, too, on the etymology of the names are of special value. At present the work comprises only the names known up to the end of 1853, but it is expected that all those which have been since published will be treated in a supplement.

— It will, perhaps, be remembered that we (*Tribune*) gave some few weeks ago, "as news-matter of possible interest," a report of a meeting of the Philadelphia Academy of Natural Sciences, at which a specimen of Wheat, with a head of the *Bromus secalinus* or Chess attached (sent by Mr. Levette, of the Indian Geological Survey), was presented, and spoken of at length by Mr. Thos. Meehan, and examined by the members present, and which, so far as the naked eye could detect, appeared to be a natural outgrowth. In order that there might be no mistake, however, Mr. Meehan moved that the specimen be handed over to the microscopical section of the Academy for dissection, which was done. The Microscopical Committee have now reported, and it appears that the Chess was neatly inserted into the Wheat stalk, and held there by a substance "which the committee believe to be gum tragacanth."

— THE December number of the *Botanical Magazine* contains coloured figures of the following plants:—*Rheum officinale*, one of the most effective of all the species, and interesting as affording the medicinal rhubarb of commerce. It is also figured and described in THE GARDEN, Vol. V., p. 439. It is a native of Tibet and Western China.—*Episcia fulgida*, a brilliant scarlet-flowered Gesneriad, with oblong netted hairy foliage. It is a native of New Granada.—*Boucerosia marocana*, a plant resembling one of the columnar *Euphorbias* in habit, but nearly related to the *Stapelias*. It has glaucous quadrangular fleshy stems, and rich brown-coloured flowers, each as large as a sixpence, marked towards the centre with concentric yellow lines.—*Oncidium zebrinum*, a beautiful and distinct species from Venezuela. It flowered in Sir Wm. Marriott's garden at Down House, Blandford, the branched panicle being 12 feet in length.—*Fuchsia procumbens*, a gracefully drooping species from New Zealand, bearing erect yellow and crimson flowers, the anthers of which are blue.

— GEIGER, in his "Peep at Mexico," thus describes the vegetation near Colima:—"The trees are not large, but are so interwoven as to form impassable barriers, even apart from the bushes and shrubs that spring from every spot of vacant ground. Hundreds of creepers cling to every trunk, and twine round every branch, connecting by a thousand wiry threads, thickets, shrubs, and Cacti—a massive bulwark of profuse vegetation, through which the axe alone can hew a way. The huge *Organo* Cactus, with its tree-like stem, often 2 feet in diameter, and 10 to 15 feet high, sends up its stiff straight branches to a height of 30 or 40 feet from the ground, whilst the smaller species mingle in thousands with the shrubs and bushes nearer the earth. Wherever the creepers may have neglected trunk or bough, prolific parasites, gay alike with taper leaf and gorgeous blossom, hasten to perform their part in this fairy work of Nature. The flowers have little scent, but their profusion of white, yellow, and red, blended with the countless shades of green, charm the eye with tints as various as they are magnificent."

THE INDOOR GARDEN.

PYRAMIDAL COCKSCOMBS.

(CELOSIA PYRAMIDALIS.)

Few plants are more useful than these either for conservatory decoration or in the form of cut sprays, and for autumn and winter indoor decoration they deserve more general culture than they have hitherto received. Seeds of them should be sown in February, and, for succession, again in March or April. Treated like Balsams, Cockscombs, and similar tender annuals, they succeed admirably when grown in frames or pits. Like ordinary Cockscombs, they are liable to be attacked by thrips, and especially by red spider. To obviate such attacks, therefore, the seedling plants should be potted off into a rich compost consisting of sandy loam and well rotted hot-bed manure or leaf mould. A genial atmosphere should be maintained throughout all stages of growth, and the plants should be syringed during both morning and afternoon in fine weather. Where fine specimens are required a little bottom-heat should be given them, and where dung and leaves are used in order to obtain such warmth, the genial moisture arising therefrom does much towards keeping all insect pests in check. Shift the plants into larger pots as required, using 12-inch ones for the largest plants. A cool span-roofed greenhouse is the best position for them when too large for pits or frames, and, as the pots become filled with roots, give copious waterings with liquid manure. Like the Chrysanthemum, when allowed to get dry at the root loss of foliage is sure to be the inevitable result. Well-grown plants of this class of Cockscombs are often as much as 5 feet in height, and nearly as much in diameter—literally masses of rosy-lilac, purple, yellow, or crimson plumes, which, in some strains, droop gracefully, as shown in our engraving prepared from a photograph of a specimen of this kind of Cockscomb, grown by Mr. Frisby, gardener, at Blankney, the seat of H. Chaplin, Esq. Some varieties are more erect in growth than that here represented; but we like the drooping forms best, inasmuch as they are more bushy and make the finest shaped plants. Well-grown specimens of these Cockscombs are invaluable for grouping along with Chrysanthemums and other winter flowering plants, to which they add an agreeable variety; and cut sprays of them, seen under artificial light, have an exceedingly brilliant effect. Mr. Yates, of Sale, who uses such plants largely for decorative purposes, recently sent us some remarkably well-coloured plumes of the crimson kinds, and we also saw some fine compact plants of these *Celosias* lately in Lord Londesborough's garden at Norbiton. Mr. Denning, the gardener there, classes them amongst the most useful and effective of all bright-coloured winter-flowering plants.



A Pyramidal Cockscomb.

EPIPHYLLUMS FOR WINTER DECORATION.

THE forms which Epiphyllums can be made to assume are various—dwarfs on their own roots, standards, pyramids, umbrella-shaped, and rafter plants. When grown as dwarfs on their own roots they are well adapted for hanging-baskets. Grafting at once raises them to a higher level, and allows the flowers to display their

peculiar beauty to the best advantage. The ease with which they may be made to unite with any of the Cactus species is also in favour of grafting. *Cereus speciosissimus* forms an excellent stock on which to graft Epiphyllums, as it is of strong growth and long duration, and is well adapted for carrying the weight of the Epiphyllum. Grafting is a simple matter—all that is required being a good sharp knife and some pieces of the Epiphyllum. If for a pyramid, begin at the bottom of the stock by making a cut half through it, into which insert a piece of the Epiphyllum cut at the end into the form of a wedge; then bind the whole together with a piece of matting, to keep the scion in its place. Work in this manner round the stock, using smaller and shorter pieces at every upward stage till the top is reached, on which a piece should be inserted. When required in the form of umbrellas, the top of the stock should be cut square and a piece cut out of it in the form of a wedge, into which insert two pieces of Epiphyllum. In a growing humid atmosphere and shaded from the sun, such scions will unite in a very short time. As soon as they have got established they should be placed in a stove to make their growth, after which remove them to a cooler and

drier temperature to harden, and finally expose them to the full blaze of the sun to induce them to set their flower buds. They will begin to bloom in November, and by removing a few at a time into a warmer house, the blooming season may be prolonged till the month of February. During the growing season they will require a plentiful supply of water, and, while coming into flower, one or two waterings with liquid-manure will be of advantage to them; but they should now be watered more sparingly than they have been, for if the soil gets over-wet or sour, the flowers will last only a very short time. During the dormant months few waterings will be necessary. The best soil for Epiphyllums is a good fibry loam, some lime-rubbish, a few half-inch bones, and a little cow-dung. The pots in which they are grown should be well drained, an essential point. Do not over-pot, as they will flower best when they get pot-bound. If a plant trained in the form of a pyramid or umbrella be placed in the centre of a vase surrounded with some dwarf plants of *Bouvardia*, and a few plants of the variegated *Panicum* to hang as a fringe, it forms an effective ornament for the drawing-room; and what adds to its value is, it will continue in perfection for several weeks. Anyone who has seen the beauty of this plant when grown in the form of a pyramid or umbrella, has some idea what it is like when used as "a creeper." For this purpose the *Pereskia* forms an excellent stock on which to graft it, on account of the ease with which the Epiphyllum

unites with it. This stock is by no means difficult to grow. Cuttings of it may be put in during the spring; and, when rooted, pot them off singly into 3-inch pots and keep them in a stove temperature, where they will grow very fast, and will soon fill their pots with roots. As the plants grow, they must be shifted into larger pots, using a soil composed of fibry loam, some cow-dung, some lime-rubbish, and some $\frac{1}{2}$ -inch bones in a somewhat rough state. Give abundant drainage, as the plants when growing will require a liberal supply of water at the root, which must be allowed to percolate freely through the soil. March and April are the best months in which to graft; but this operation can be performed at almost any season. Cover the *Pereskia* from top to bottom, at distances of about 6 inches apart, with pieces of the Epiphyllum, which may be kept in their places by being pinned with one of the spines that grow on the stock. Give them the same treatment as recommended for pyramids, and thus managed, when in blossom, nothing can excel the beauty of this plant when trained up the rafters of an intermediate house or warm conservatory.—*The Gardener.*

THE GARDEN IN THE HOUSE.

FLORAL WREATHS AND CROSSES.

DAY by day the custom of placing floral offerings on the graves of departed friends and relations, is, I am happy to say, coming more and more into vogue. Some have a dislike to this custom, but for my own part I cannot see with what reason, as, after all, what can be more appropriate for such a purpose than flowers? Such decorations generally consist either of dried or fresh flowers. Of the latter I shall treat fully, but of the former merely remark that it is much better to buy them ready made than to make them, as one never can command such a selection of dried flowers and Grasses as can be obtained ready mounted in the florists' shops in Covent Garden. They can be bought, too, of every size and form, and at a cost to suit the means of every purchaser. Living flowers for the purpose of laying on tombs are mostly mounted in three forms, viz., wreaths, crosses, and flat bouquets. The colours selected should be of delicate hues, as bright and glaring colours would be quite out of place for this purpose. For a young or unmarried person, pure white is generally selected, and for a married or elderly person, violet or mauve is a pretty colour to introduce. The selection of flowers must of course depend on the season of the year. The foundations of crosses are mostly made of flat laths, such as are used by plasterers in the formation of ceilings, or straight Hazel rods; that of wreaths, of wire; and for flat bouquets, branches of Yew are most frequently employed. In these different devices a quantity of Wood Moss is used, particularly where they take the form of a wreath or cross, for, as well as preserving the freshness of the flowers, it also forms the foundation or mat of green into which the flowers are worked or bedded, if I may be allowed to make use of the term; and, on account of occupying so prominent a position, only that which is perfectly green and fresh-looking should be employed. All Moss to be used in the construction of crosses should be well washed in water, so as to remove all particles of decayed leaves and chips of sticks which are always to be found through Wood Moss. After it has been passed through the water till quite free from such rubbish, the moisture should be gently squeezed from it, except enough to keep the flowers fresh, without leaving a damp mark where the decoration rests. When this has been done the Moss should be picked over, and all the stems placed in one direction; for, the points of this Moss being of a lighter and prettier tint than the other portions, by placing them in this manner an evenness of colour in the foundation is obtained. The formation of a wreath is very similar, except that to keep the circle perfect requires more practice than the straight lines of a cross. Having some strong wire, the Moss, the flowers, and a reel of fine binding wire ready prepared, the formation, say, of a wreath, may be thus proceeded with. First, make a piece of the strong wire into whatever sized circle is required; then take some of the Moss and bind it with the wire off the reel on to the stouter wire, catching the stems of the Moss about half way down with the former; keep the Moss as even as possible, and make it a perfect bank or ribbon of green of a width in proportion to the size of the circle. Into the Moss, as you go along, the flowers should be worked, the Moss being pressed up close to them, so as to give them moisture, and also to keep them firmly in their places. The most difficult part of the wreath to complete nicely is where the stems of the Moss meet in the finishing of the circle. When it comes to the junction, the Moss must be worked in both ways till the space is filled by one finishing tuft. In a cross the end is the most difficult part, and this must be finished in a similar manner. In flat bouquets, much Moss is not used, at least not in proportion to the amount employed in crosses, &c., all that is required here, being just sufficient to keep the flowers fresh mounted on twigs or stub wires as in a hand bouquet. Most bouquets of this kind are made of an oval or pointed form, the centre being composed of some large-sized flower; Arum blooms are favourites for this purpose. As to the selection of flowers, as I before remarked, they must be in accordance with the season of the year, and I think the best guide I can give for this purpose is to give descriptions of a few decorations I have made myself at different seasons of the year. In November, I once made a wreath of large dimensions, composed of the following flowers—White Camellias, Eucharis, Bouvardias, Roman Hyacinths, Neapolitan Violets, and Ferns of the following varieties, *Adiantum cuneatum*, *A. marimum*, and *A. Trichomanes*. In December I made a cross about 18 inches high, composed of white Camellias and Roman Hyacinths only; also, at the same time, a flat bouquet, in which the following were employed—white Azaleas, Bouvardias, Eucharis, Roman Hyacinths, Heaths, and a large sized Arum bloom, with Fern fronds interspersed through the whole. Late in February, I made a large-sized cross, about 3 feet in length, of white Camellias, Snowdrops, pips of a lavender-coloured Hyacinth, and Fern fronds; and, at the same time, two flat bouquets

of Violets and Primroses. During the summer months such flowers as Lilies, white Rose buds, Lily of the Valley, &c., could be substituted for the above, which I have merely enumerated on account of having used them myself, and because their names indicate the style of flowers which should be employed when obtainable. Box and similar shrubs are much used in the construction of wreaths and crosses sold by the florists, on account, I suppose, of their being more quickly made with such materials; but I myself much prefer the fresh green of the Wood Moss. In the same manner as I have described, can be fashioned floral ornaments, such as are so much used at Christmas, Easter, and Whitsuntide in our churches. The large wreath which I have described would be well adapted for the decoration of a font, or, perhaps, it would be more suitable for that purpose if it were made of white flowers; however, the plan and mode of manufacture would be just the same in either case. The cross and flat bouquet would do well also for the decoration of an altar. In the construction of crosses or wreaths, too many large flowers, such as Camellias, should be avoided, as they tend to give the decoration a flat and heavy look, which should be carefully avoided. It is the fact of too many flowers of this kind being employed that makes these styles of arrangement, when exhibited in the florists' windows, appear out of keeping with their hand or button-hole bouquets, as regards lightness, and there is no reason why this should be so. Lightness is the great perfection of art in all floral arrangement, and why should it not be carried out in this branch as in any other, save that the more Camellias are employed, the more is charged for the ornament? I have seen wreaths exhibited in Covent Garden made solely of white Camellias, packed as close as they could be; the effect was heavy and bad, and, for about half the cost a much more effective arrangement could be made with flowers of a lighter growth, only a few Camellias being employed in its construction.

A. HASSARD.

HANGING BASKETS.

WHAT looks better than pretty hanging baskets tastefully filled with plants? and yet, how seldom are they to be met with! Baskets of living plants may easily be had in perfection; select such kinds as will stand in rooms. As regards the baskets themselves, I like to see the wire-work painted dark green. Some paint it with bright colours, which quite spoils the effect of the flowers, which should be gay enough, as regards colour, without any addition in the way of paint. Inside the wire-work put a thick layer of green Moss, so as to prevent the soil from dropping through, over this put some broken crocks, and then fill up with whatever compost is best suited to the requirements of the plants with which the baskets are to be filled. For summer decoration there are numberless plants that can be grown in baskets; but, for winter blooming, nothing is better, or looks more showy, than Rollisson's Unique Geranium or Scarlet *Tropæolum*, both of which will continue in flower all through the winter, and droop down gracefully all round the basket. A basket, indeed, never looks well unless it is furnished with some drooping plant round the edge, as, for instance, with the variegated Ivy-leaved *Pelargonium*, called *L'Élégante*; while, in the centre, should be a nicely-grown plant of *Fuchsia* Mrs. Marshall. Pretty baskets may also be made of silver variegated *Geranium* Lady Plymouth and bright blue *Lobelia*, or of blue *Convolvulus*, with *Christine Geranium* in the centre; in fact, any flower that suits, and is put in with good taste, will look well. For large baskets, suited for lobbies, mixed foliage plants, such as variegated *Sedums*, *Echeverias*, *Iresines*, and *Centaureas*, have an effective appearance. A window box made of wood, and lined with zinc, suspended by four cords or wires, up which can be trained creepers, also makes a pretty room ornament. The great point as regards creeping plants in baskets or boxes fresh and in good health is to give them plenty of water during the growing season, but more sparingly in winter, and to keep the leaves clean. If baskets are hung high there should be some means of lowering them, as it is troublesome getting up to them every morning with steps. If the baskets are small, the best way is to carry them away and water them outside; but in the case of large baskets this cannot be done, so a tea tray or something of the kind should be placed under them to catch the drip.

H. A.

Rustic Picture Frames.—Pretty frames may be made with nuts and cones. I lately saw some made of Beech-nut shells, fully open, along with others not so far advanced, Acorns, Hazel nuts, and numerous small cones of different sorts, the whole forming a pretty and effective frame, which may be either square, oval, circular, or hexagonal. A piece of strong cardboard is brushed over with glue, in which the nuts are set on a ground-work of dried Lichens. The larger cones are generally placed singly, but the smaller ones are mixed and grouped together. When finished, the cones and other parts receive a slight coating of varnish. Where plenty of cones and nuts can be had, very pleasing combinations might be made in this way.—J. MUIR.

THE FLOWER GARDEN.

THE JALAP PLANT.

(EXOCONIUM PURGA.)

Of all autumn-flowering hardy plants, there is, perhaps, none more beautiful than the Jalap (*Exogonium Purga*). Of its complete hardiness there can be little doubt. It has lived at Bitton without any protection for four years, and each year it has flowered beautifully. We have also heard of its doing well at Drayton Beauchamp, Kew, and Fulham. We believe it has also lived out of doors, and flowered, in the Edinburgh Botanic Gardens. Mr. Ellacombe grows it in a sheltered corner, and gives it a tall wire cage to grow up, with a spreading top. It does not flower in the lower parts; but the entire top, and the pendent shoots, become a mass of most lovely blossoms. At Bitton, if not checked by late spring frosts, it comes into blossom early in September, and continues to flower till cut down by frost. Mr. Ellacombe states that, if he were to plant another, he should place it under a south wall, near a Peach or Apricot tree, and let it wind its way through the branches.



Leaves, flowers, fruit, root, &c., of the Jalap plant.

With a very little training, it would do no injury to the tree; and, in such a situation, it would probably flower earlier, and perfect its seeds. As regards its history, it gets its name of Jalap from its native habitat, Xalapa, in Mexico. It is the true jalap of commerce; by which is not meant that it alone produces genuine jalap, but that it is the plant that gives the name to the medicine. The best jalap is made from the *Exogonium*; but good jalap may also be got from many other species of the *Convolvulaceæ*—even from our British species. "*Convolvulus arvensis*, *Soldanella*, *macrocarpus*, and probably many others, may likewise be used with nearly equal advantage," says Dr. Lindley. The habit of the plant is well given in the *Botanical Register*, v. 33; but the colour is not bright enough. It is also figured in the *Botanical Magazine*, v. 73. Can any one say if *Convolvulus* (*Batatas*) *Jalapa* is in cultivation, and if it has been found to be hardy? *E. Purga* has, as will be seen, roundish tubers of variable size, those of mature growth being about as large as an Orange, and of a dark colour. These, as we have said, are the true Jalap tubers.

MUHLENBECKIA COMPLEXA.

This is a New Zealand plant sometimes met with in greenhouse culture under the name of *Polygonum complexum*. That it is perfectly hardy, a twelve years' culture out of doors will, I think, bear ample testimony. That it possesses qualities such as ought to commend it for general culture, whether as a wall-creeper or as a charming neutral-tinted zone in a flower-bed, any person who has seen it will at once admit. In this double capacity it has been for several years one of the chief decorative features of the front of my house, and is admired by every one; and when I say that the popular impression is that it is a bank of Maiden-hair Fern, I think I have said enough to justify my wish to see it introduced into more general cultivation. In the first place it is, as I have said, perfectly hardy, and in the second it possesses all the unobtrusive simple beauty of the small-leaved *Adiantums*—for the popular comparison is by no means inapt—why then, it may be asked, has its cultivation not become more general? To this I may reply, that its perfect growth and full development are not attained with that rapidity which must be looked upon as characteristic of the present age in things general, and no less in things horticultural, but more especially is it characteristic of that section of horticulture to which flower gardening belongs. I have given scores of plants away to my gardening friends, but have never yet seen them utilised to even a limited extent. Let me endeavour to describe the process by which the results I have stated in my opening remarks have been attained.

About eleven or twelve years ago, from a plant growing and rambling and scrambling freely over a bit of rockery, I went to work and struck a score or two of cuttings, under the impression that the plant possessed a value beyond what was indicated in this, its almost natural condition. These, after a year's growth in pots, I planted out in a semicircle, pegging down the longer shoots, and, during the season, occasionally clipping back any stray shoots. Certainly, for the first couple of years, it did not look very promising; but, in the third, it had acquired sufficient compactness to form a continuous line of leaf tracery, all the more beautiful on account of its extremely slender dark brown stems, and also the peculiar olive-brown tint of the leaves themselves. This semi-circle, or zone, has since that, year by year, increased in density, and forms a mass about 6 inches high and 15 inches or so in width, requiring no attention beyond clipping with a pair of shears two or three times during the summer. At either end, next the wall, its twining branches have been allowed to grow, and they will soon have surrounded the lower windows with a sort of leafy framework of exquisite beauty. Some of my floricultural friends may say, "But what are the flowers like?" To this inquiry I can give no satisfactory reply. Though I have known the plant for over twenty-five years, I have never seen it bloom. This I am the more anxious to see from the fact that it is said to have a baccate, or berry-like, fruit; and in that fact chiefly rests its claim to the special generic title of *Muhlenbeckia*—a name by no means so euphonious as that of the old classical *Polygonum*. Therefore, on the beauty and singularity of its tiny round leaves and its twiggly dark stems alone it rests its claim for popular favour. But it possesses a value beyond even these—namely, as a pillar plant; whether secluded in a sort of recess in the ordinary shrubbery, backed up by the light green foliage of Laurels, &c., with which it forms a striking contrast, or standing alone on the Grass, it is in either case an object of the greatest beauty. The way in which this, its third attribute, was elicited, it may interest some of your readers to know. I will therefore briefly describe it as follows:—At the same time as I planted out my experimental semi-circle, I sent a plant to my father at Dublin, merely stating that I contemplated making something of it, and asking him to do the same. Singularly enough, while my ideas altogether ran in the horizontal, his assumed the perpendicular, and whereas I pegged mine down, as before described, he trained his up to a stake. A few years after, on paying a visit to the paternal domicile, at the Garden Farm, I was delighted to find his plant presenting the very *beau idéal* of a vegetable fountain; it was then about 6 feet high, and appeared like a gushing stream of leaves, rising to the height described, and falling, as it were, down the long pendent

branches, whose ends swept the surface of the ground. In a letter from my father the other day he describes it as one of the most effective plants he has; it is now 12 feet high, attached to a stout pole, its means of support being completely hidden amid its dense mass of spray-like branchlets, and on the ground a mass of growth some 6 or 8 feet in diameter, of irregular outline, that appears to me, from his description, to realise the fountain picture I have already endeavoured to describe, with its basin of spray-tossed foliage beneath. Accompanying the description, he sends a rough sketch of the plant, which, from what I have already seen, I can easily understand, but, to do it justice a good photograph, supplemented by the best skill of a good engraver, would be required. Possibly, I may on some future occasion obtain the former, and, however difficult it may be, I have no doubt you would be able to supply the latter. Nor does its value cease here, as it forms an exquisite suspended plant, admirably adapted either for a conservatory or window. Under these conditions its wire-like stems, and rounded leaves are exhibited to the utmost advantage, and in a hanging basket its lack of brilliant blossom may be always supplemented by associating it with other plants to which *Flora* has evinced a greater mead of generosity in the distribution of her favours. The *Muhlenbeckia* is by no means difficult to propagate, it strikes freely in a cold frame, if the cuttings are put in in September, the only point to be observed is that in selecting the cuttings, they should be taken from the thicker shoots that are generally sent up from the ground in the form of suckers, not from the twiggy shoots; the former strike freely and form snug little plants the first season; the latter, if they *do* strike, will be at least two years before they form well-established plants.

While writing the above I am reminded of another hardy New Zealand plant, which was alluded to at page 424 under the name of the golden-leaved *Diplopappus*. A good many years ago I gave it that provisional name when sending it out to my numerous correspondents; and, seeing that I was unwittingly guilty of giving it a misnomer, I avail myself of this opportunity to correct it. When it bloomed with me, some years ago (growing freely as a hardy shrub, which it has done for the last fourteen years), I found that it was more nearly related to the old genus *Ozothamnus*. I sent it to Dr. Hooker, and he pronounced it to be *Cassinia Vauvillarsii*, a genus closely related to the former. It produces numerous small whitish flowers in compact clusters; though pretty in their way, they are not sufficiently showy to recommend the plant for general culture; but its golden coat, which suffuses the back of the leaves, and still more densely the entire young stems, will always make it an object of interest. By-the-way, my original name was *Chrysochlada*, not *Chrysophylla*, the former meaning literally golden coated, the latter only golden leaved. In adapting it to general purposes as a bedding plant, it has not realised my expectations; but, as a shrub, it is well worth growing for its own merits, as also from the interest that attaches to it as one of our few hardy New Zealand plants.

Hull Botanic Gardens.

JAS. C. NIVEN.

BULB BEDS IN SEVERE FROSTS.

SEVERAL years ago, when my enthusiasm in horticultural affairs frequently got the better of discretion, I made some very expensive blunders which I never like to talk about, unless for the purpose of keeping somebody else from falling into the same ditch. Once upon a time Mrs. "Ruralist" suggested that large beds of early, spring-flowering bulbs would be a great addition to our garden; and, as I fully agreed with her in this matter, arrangements were made to carry out the suggestion. In the woods about a mile distant, I found a spot where charcoal had been made several years before, and the debris of fine coal ashes and black soil was quite plentiful. These materials are supposed to be excellent for bulbous plants of all kinds, and of course I hastened to secure them of the owner of the land. Twenty-five loads were brought, and bulb beds made according to rule, and upon scientific principles. When ready, I made my selections of Hyacinths, Tulips, Crocus, Narcissus, and other suitable kinds that would make a good show. I confess to have secretly thought that I would surprise Mrs. "Ruralist," not with the quantity but with the quality and beauty of the varieties; consequently only the very choice named sorts were

purchased. The bulbs were planted at the proper season, and, I think, in a proper manner. As some of them were considered not perfectly hardy, I made arrangements to give protection in winter. Besides, did not and do not the garden calendars recommend this, even with the most hardy kinds? Of course I was well aware that mice would eat these bulbs if they could get at them; but, when buried several inches deep in the ground, danger from this source appeared to me out of the question. When the ground began to freeze the bed was covered 4 or 5 inches deep with coarse hay, and no further attention paid to it until spring, then the covering was removed. We then discovered that the ground moles, finding a sheltered spot, had congregated there and, probably assisted by field mice, which follow in their burrows, the two together had made a clean sweep of my choice bulbs. About a dozen Hyacinths only, on the outer edge of the bed, where the ground remained frozen to a considerable depth, were left of the entire collection. Had I kept the hay off the bed a week or two the ground might have become so hard frozen that the moles and mice could not have made an entrance; still there are always more or less thaws in winter of which such vermin will take advantage. If there are no mice or moles about a place, then protection with coarse litter will answer; otherwise there is always more or less danger in applying anything to beds containing bulbs which will prevent freezing, because vermin are pretty certain to congregate in such favourable locations. I frequently hear of the loss of Lilies, Hyacinths, and other hardy bulbs, the purchasers attributing their failures to unhealthy plants; and while this may be the true cause in some instances, still I am inclined to think that moles and mice get more than they are accused of taking.—*Moore's Rural.*

Wake-Robins (Trilliums).—The genus *Trillium* is a purely American one, with the exception of one species which is found in Japan. About ten species belong to the genus, all of which are interesting, and some sufficiently showy to claim a place among choice border flowers. The *Trilliums* would not at first sight be placed in the Lily family, as their general appearance is so unlike that of the Lily; yet the structure of the flowers is such that recent botanists have thus classed them. The genus gets its name from the Latin for triple, the parts of the plant being in threes; we have three leaves upon the stem, three parts to each calyx and corolla, twice three stamens, and the parts of the pistil in threes. They all have a tuber-like root stock from which arise a few simple stems about a foot high, each bearing three broad leaves, and above these the flower, which is either elevated above the leaves, upon a stem, or sessile close among them, as in the case of *T. sessile*, lately figured in the *Agriculturist*. The flower of this species is a dark purple or maroon colour; but the great beauty of the plant lies in the leaves, which are finely variegated or marbled with a very pale and a dark green, and, when perfect, equalling in richness some of the choicest of greenhouse foliage plants. This species is found from Pennsylvania and Wisconsin, southward; and in South Carolina and Florida there is a closely-allied species, *T. discolor*, which has still more strongly-marked leaves, but otherwise nearly related to this one. The *Trilliums* will grow in any good garden soil that will not become too dry in summer; and, when they become well established, a process requiring a year or two, they will take care of themselves, and unfold their flowers every spring. The large-flowered *Trillium* (*T. grandiflorum*) is a remarkably handsome plant, which has received the name of the white Wood Lily. It should be grown in moist, shady, sheltered spots, by the sides of wood walks, in moist shady hollows of the rock-garden, or in the hardy Fernery along with Royal Ferns, and similar moisture-loving plants. In such situations its pure white blossoms, produced freely in spring, are strikingly effective. *T. cernuum* is another interesting kind; which flowers later in spring than *T. grandiflorum*. It succeeds well among shrubs in moist peat borders, or it might be planted in moist spots in the hardy Fernery or rock garden.

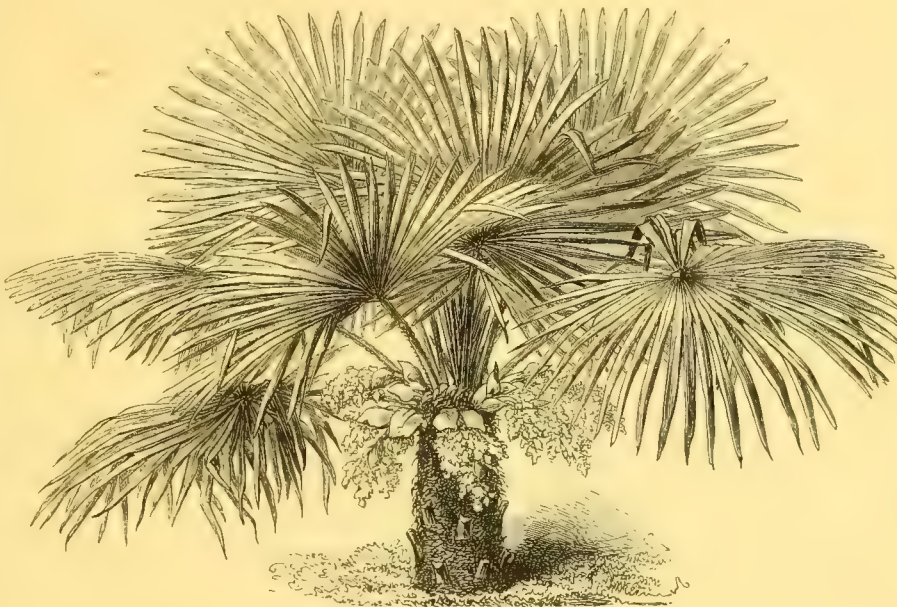
Spiræa palmata.—Some of our readers will call to mind a plant bearing this name brought out in England with a flourish of trumpets similar to that which attended the introduction of *Primula japonica*. It was sold at a high price then, and is even now priced in the catalogues at from 3s. 6d. to 5s. sterling. Yet it is by no means a new plant, having been first introduced into England from Japan in 1823, and grown in many collections of herbaceous plants of that period. It is a curious instance of the result of neglecting the cultivation of hardy perennials for that of bedding-out plants, when an old inhabitant of our gardens can be brought forward and sold at ten times its original price. The specific name *palmata* has been applied to no fewer than three different plants of the *Spiræa* family. The first, of which we have just spoken, is described in Thunberg's "*Flora Japonica*," and is a native of Japan. There

appears to be two varieties of it, as he speaks of it as having white or red flowers. The second is *Spiraea digitata*, a native of Eastern Siberia, named *S. palmata* by Pallas, the Russian botanist. The third is *Spiraea lobata*, a native of this country, named by Linnæus *S. palmata*.—*American Garden*.

THE MALE HARDY PALM.

(CHAMÆROPS EXCELSA.)

THE interest attached to this Palm as an ornamental plant, and particularly the remarkable difference existing between male and female plants of it, have induced us to present our readers with the accompanying sketch of the male variety. The male kind is known by its large thick trunk which, near the ground, branches out into strong vigorous boughs, thickly covered with spiky foliage of a deep yellow colour; these spikelets at first grow out straight from the branches and then incline sharply downwards. It bears innumerable little flowers, growing closely together, of a beautiful deep orange colour tipped with yellow. The female is comparatively small, with much thinner branches, the greenish-yellow leaves of which grow straighter than those of the male sort, describing no curve or angle till much further from the stem. Its numerous small flowers, of a pale yellow hue, also grow at greater intervals apart. It blooms from April to May, and the seeds ripen from February until April the following season, thus requiring an entire year for complete fruition. As regards display, the preference must be given to the male trees, which may well be pronounced exceedingly ornamental. It is a moot point whether the males or females are most numerous. Certain circumstances would indicate that the males are. For instance, at Bordeaux, M. Duriende Maison-neuve has only one plant of the female variety in his shrubberies, whilst quantities of males grow there. M. Thuret, of Antibes, also informs us that all the plants (four in number) which have flowered with him are males; but at the Paris Muséum the reverse appears to be the case, since out of five plants which have recently bloomed there four are females.—*Revue Horticole*.



The Male Hardy Palm.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

True Creepers.—I find the word "creeper" in *THE GARDEN*, and other horticultural papers, often erroneously applied by correspondents to all climbing plants. Now I hold that true creepers are only those which adhere to, or creep up a wall by means of rootlets or tendrils, and without the assistance of nails or trellis. Of these, I believe, there are but three hardy species, and shall be glad of correction if I am wrong. These three are—*Bignonia radicans*, Ivy, and Virginian Creeper and their respective varieties. *Ficus repens*, another true creeper, has proved itself hardy in some places, but can scarcely be quoted as such generally.—T.

Evergreens for Beds in Winter: A. H. Aucubas of many sorts, green and variegated Box, common and Portugal Laurels, green and variegated Hollies, *Aralia Sieboldii*, dwarf Junipers of sorts, *Ligustrum coriaceum*, *Raphiolepis ovata*, *Viburnum acerifolium*, *Osmanthus* (green variegated), *Biota elegantissima*, *Daphne Triniana*, Tree Ivies of sorts, *Thujoopsis dolabrata*, *Thuja dumosa*, *Taxus japonica*, *Erica herbacea carnea*, *Berberis Aquifolium*, *Andromeda*, *Pernettya* (in sheltered situations), variegated *Euonymus*, *Laurustinus*, *Skimmias*, *Retinosporas*, common Yew, *Euonymus radicans* variegated, *Taxus elegantissima*, *Thujoopsis borealis*, *Thuja aurea*, *Juniperus Sabina* variegated, and *Cupressus Lawsoniana* (Waterer's green form of it). Any dwarf Conifer or handsome evergreen that is compact may be used. Many Japanese plants are among the best for this purpose. They should be procured early in autumn, and be placed in pots sufficiently large to hold the roots without cramping; plunge them in the beds deeply enough to cover the pots.

THE FRUIT GARDEN.

UNHEATED STRUCTURES FOR THE CULTURE OF THE VINE.

Of these the only glass structure to which allusion may here be made is the ground Vinery. This is simply a span-roofed frame, with moveable ends, from 2 to 6 feet wide, and is made in lengths of from 6 to 12 feet. It is laid upon the ground, with its ends running north and south, and the Vines are trained under the ridge. Being portable, it is suited to the wants of the small amateur who can grow a few Grapes in it during the summer, and store plants, or grow salads in it in the winter and spring months. For Grape growing upon a moderately large scale it is, however, not to be recommended, as it is obvious that its adoption beyond certain limits would be attended with more expense and less satisfactory results than a properly constructed Vinery of equal capacity.

Grape Walls.

A Grape wall to be of any service should be 10 or 12 feet high, and flued, so that it may be heated when needful; this will be an undoubted advantage, and hardly more expensive in construction than if no means of warming were secured.

A wooden board 14 inches wide, or a glass coping at the top, throws the rain off and, in a great measure, affords protection from the frost. The Vines are trained to wires placed 6 inches apart, and 4 or 5 inches from the wall.

Vine Borders.

Under this heading I propose to treat of the heating, formation, and composition of the border, bottom-heat, and fermenting materials. The propriety of affording the roots of the Vine a temperature corresponding with that of the branches has always been recognised, and the

practice of applying heat artificially to the roots by the aid of fermenting materials probably began with the culture of the Vine under glass, or soon after, and is still the plan most generally and necessarily adopted in the production of early Grapes, and in skilled hands has always been productive of good and lasting results. Whether the border is inside or outside, a gentle hot-bed, by pushing the roots into early and healthy action, and keeping them near the surface where they are more under control, never fails to produce good effects; and the plan has often been fallen back upon when all other means have failed to get up vigour in feeble and exhausted Vines. Indeed, I am aware of cases where the hot-bed system has been resorted to again in a systematic way after an elaborate system of heating the borders by means of hot-water pipes had been tried, and failed through mismanagement or some other cause. The materials for the hot-bed are litter and leaves, which are generally plentiful about most gardens. Stable litter alone is too quick and violent in its action, but mixed with leaves, in greater or less proportions, almost any degree of heat may be steadily maintained for any length of time, provided the bed is turned occasionally and fresh materials added as required. When the hot-bed is the only means available for applying heat to the roots, the

border should be covered in autumn with about a foot of litter and leaves, which will be sufficient to keep the soil at a temperature of 50°, or thereabouts, more by preventing the natural heat of the soil from escaping than by any positive action which a layer that depth exercises. As the Vines progress, and the temperature of the Vinery is raised, so must be the temperature of the border by adding more litter and leaves, and turning the whole over and mixing it thoroughly about once in three weeks; and this practice must be continued until the maximum temperature is reached, when the Grapes are approaching maturity. After this, the temperature may be allowed to decline gradually, until the Vines are going to rest, when the hot-bed should be reduced to a mulching only. As a rule it is seldom necessary to keep the temperature of the border above 75° or 80°, even in the case of Muscats; and I find, by constant experience, that a fermenting bed of an average depth of 18 inches or 2 feet is sufficient to keep the soil of the border at a temperature of 80° 18 inches below the surface. As an instance of the effects of hot linings annually applied, I may state that in 1865 I had to deal with a house of old Vines about sixty years of age, which were in a very feeble condition; but it being necessary to keep them on, and make the most of them for a few years longer, I began by applying hot linings to the border in November, keeping them up till July the following year, the Grapes being wanted in June; and this practice I continued for six years. The effect, after the first and second years' application, was to bring a host of roots to the surface of the border (there were none before), and to restore vigour to the debilitated Vines, from which I cut Grapes of excellent quality annually up till 1872 for my employer's table during the London season. In June, 1871, I exhibited six bunches of Black Hamburgs from these Vines at the Royal Horticultural Society's show at Nottingham, which were reported upon by the horticultural press at the time as "capital Black Hamburgs, cut from Vines more than fifty years old, which are restricted to one rafter, and pruned to the best bud." The rods were only 14 feet in length, and were cropped at the rate of 20 lb. to the rod; and the last year I took nearly 30 lb. off one Vine. When it became necessary to remove this old Vinery in its turn, I was undecided for a while whether to retain the old Vines or plant new ones, so well had they behaved, and so vigorous were they. Their restoration was entirely due to the annual application of hot linings to the border, as in no other way were the roots meddled with. No doubt many instances of this kind could be reported. The hot-bed system has been characterised as cumbersome, untidy and expensive. It is cumbersome comparatively, untidy it need not be, and as for the expense, it will be found—when we calculate the expense of heating a Vine border with hot water pipes, the cost of fuel, and the extra care and attention required in the way of firing and watering, &c., not to mention the fact that over-heated borders have to be protected on the surface somehow—that the hot-bed system is the cheapest in the end. Early Vinery borders are now generally made inside, however, and the hot-bed is not so essential in such cases; but in the majority of gardens no other means of applying heat to the border are available, and it would be unwise to ignore the practice here.

Heating the Border by Hot-water Pipes.

No subject connected with Grape culture has been productive of more controversy than this. Some good gardeners advocate this system of heating, while many others, who have had ample opportunities of testing the system practically, condemn it, as being not only dangerous and unnecessary, but even disastrous in its results. I have now before me a letter from an eminent gardener, the superintendent of a noted establishment, where all the early Vinery borders are heated by hot-water pipes in a most complete manner, in which he reports his past and present experience of the system during the last fifteen or twenty years as follows:—"In reply to your inquiries about the working of the bottom-heat in the early Vineries here, I have to state that I find it of little or no advantage, but the source of considerable danger in our naturally dry and warm soil, if it is not closely watched, so that I have given over using it, except for a few days at starting, after which the fire is put out, and not lighted again till the

following season. I always water with warm water, which I believe is quite as effective and far safer than bottom-heat. In cold or wet localities, or soils, a well-arranged system of bottom-heat might be of more service than it is here for early forcing; still it must be used with the greatest caution, even in such places, for a day's neglect by the man in charge of it would pretty well settle the crop for that year. The system was tried in almost all forms at T. when I was there, between 1850 and 1860, and no place wanted it more, considering the soil and climate; but it never worked satisfactorily, and was the cause of no end of 'rows' and extraordinary crops of red spider instead of Grapes. It has long been discontinued there now, and Mr. — only covers his outside borders with 18 inches of litter and leaves, and wooden shutters to throw off the rain, and has better crops of Grapes than was ever produced there with bottom-heat. This is my experience of the system, but I know of no instance in which it could be said to have worked satisfactorily; in fact, I cannot point to a place where it has paid for the cost or fixing, therefore I am no advocate of the system in any form in which I have yet seen it applied." The experience here related tallies exactly with my own here and elsewhere, and with that of others of whom I have made inquiries concerning the matter. Still, though the system has been hitherto disappointing in its results (and it is doubtful if ever it will bear being measured by a debtor and creditor account), it finds favour with some good Grape growers, who continue to advocate it, so that we may yet see it applied successfully. It is not a question of bottom-heat, the advantages of which are undisputed, but how to apply it with safety on the hot-water principle. Vegetation flourishes around hot springs and above subterraneous fires, but in such instances the source of heat is so deep as not to be felt injuriously upon the surface of the ground; were it otherwise, the effects upon vegetation would be similar to those produced by hot-water pipes when placed in proximity to the roots of a plant, but place the pipes deep enough, and we get quit of all risk and danger. In fig. 1, I have shown how this may be accomplished. The pipes are laid in narrow chambers 15 inches below the surface of the sub-soil and covered over; the border is then formed above, in the usual way, as if there were no pipes there at all. By this plan the sub-soil has to be heated first, and it is, therefore, impossible that any scorching, or bad effect from pipes made too hot, can take place, such as happens when the pipes are so arranged among the rubble or otherwise that the heat at once accumulates among the drainage at the bottom of the border, and must at times be violent and often irregular, according to the care and intelligence of the fireman. The only objections to this plan are, that the stokehole would have to be 15 inches deeper than usual, and the expense of getting up heat would be a trifle more, neither of which are obstacles of any importance. For reasons which any gardener understands, the bottom-heat pipes should be worked by a separate boiler.

Aerated Borders.

This is a simple, safe, and inexpensive plan of warming the border (subject to weather conditions), by means of air drains, which run among the rubble at the bottom of the border, and communicate with the air by means of earthenware pipes placed at the outer edge of the border, and at the back wall inside, and projecting a few inches above the surface, as shown at A B, fig. 7. The air, owing to its greater gravity, descends at A, and, circulating among the drainage, and communicating its heat to the soil in its passage, is sucked out by the rarified atmosphere of the Vinery at B. The drains traverse the border in both directions, intersecting and communicating with each other at right angles every 4 feet; and the tiles, which should be 5 inches in diameter, are laid about 3 inches apart, in order to let the air percolate amongst the drainage, which should fill up the interstices, and cover the tiles over about 4 inches deep. Above all thick sods are laid to prevent the soil of the border from being washed down amongst the drainage, and the aerated chamber is complete. The outside pipes are fitted with plugs, and in working the drains these are taken out whenever the temperature of the external air is above that of the border. When the borders are all inside, as in early Vineries they should be, the aëration system may

be adopted by placing the feed pipes at the coldest part of the house, and drawing the air in by an exhausting chamber placed near the boiler, or at the warmest part of the house and into which all the drains lead. This system may be said to have been inaugurated chiefly by Mr. Fowler, gardener to the Earl of Stair, at Castle Kennedy, whose success as a Grape grower is well known; but, in estimating the results of the system as applied at Castle Kennedy, it must be borne in mind that Mr. Fowler employs fermenting materials in a systematic way as well, applying about 18 inches of litter and leaves to both outside and inside borders, by which means he keeps the roots of the Vines in a vigorous state of activity.

J. S.

(To be continued.)

ON THE CULTIVATION OF VINES IN POTS.

THE cultivation of the Grape Vine has been a study of mine for many years, and, I think, I may say I have met with a fair share of success. Where there is convenience for fruiting Vines in pots I very strongly recommend their growth. Where there is not sufficient convenience to grow the young Vines in their early stages, they can be procured from most nursery establishments. I am of opinion that Vines for fruiting may be bought even cheaper than they can be grown by a gentleman's gardener or an amateur, because it is seldom that sufficient room can be spared for their proper development. Vines in pots, when well grown, are most useful in several ways, not the least interesting of which is the ornamental appearance which they have when placed in vases on the dinner-table. By the following arrangement a beautiful effect may also be produced. Instead of putting the Vines on the table, place them at intervals down each side, concealing the pots under the sides of the table and arranging the tops so as to form an arch over the table from one side to the other, keeping the arches all the same height, and shaping them with hazel rods, to which the Vines are neatly tied; green Moss and Vine leaves may be woven round to hide any bare stems or hazel sticks which may remain in sight. If it happens that a large party is given in the autumn, the autumnal tints on the leaves of some of the Vines, such as West's St. Peter's, Barbarossa, and several other varieties, produce a magnificent effect. Pot Vines may be had in establishments where there are sufficient forcing pits all the year round; they are useful for forcing for the first and second crops of Grapes, a circumstance which renders the early forcing of permanent Vines unnecessary, and which saves much time, labour, and money. I always think it a pity to force permanent and well-established Vines before the beginning of January; the latest succession Grapes (in gardens where there is no stint of forcing-houses) may be produced from Vines in pots, and, by so doing, growers will be enabled to do full justice to their permanent Vines. Every practical gardener knows how detrimental it is to leave Grapes on permanent Vines after the month of January; the French mostly cut all their late Grapes off the Vines in the month of November. I was at the late Baron James de Rothschild's, at Ferrières, a few years ago; in the month of January, and there I found that all their late Grapes had been cut, and that the stems were placed in bottles containing charcoal and water, having been severed from the Vine about two months. I have stopped the bottles with Portland cement to keep the atmosphere from the water, and it has answered well; unfortunately, few gardeners have convenience to do this.

J. MEREDITH.

Garston.

PEARSON'S GOLDEN QUEEN GRAPE.

SOME years since, hearing that the native Grapes of North America enjoyed a comparative immunity from the attacks of mildew, I resolved to cross one of them, the Strawberry, with our hot-house varieties. I raised about a hundred seedlings in this manner, using in every case the Strawberry as the female parent. Many of my friends will remember the interest this experiment created at the time, from the extraordinary character of the foliage produced. The Strawberry Grape has small woolly leaves, very little cut, indeed nearly heart shaped; the seedlings were all deeply cut, some of them small, and some of immense size. I remember the Rev. C. Peach, of Malton-le-Street, asking me for a leaf as a curiosity, which was

some inches bigger in diameter than a page of the *Times*. The fruit of these seedlings varied as much as the foliage, being of all colours, and, I may add, of every degree of bad flavour, except one or two, which were golden in colour, and very sweet. Of these I chose one only to keep, which was exhibited in London, August, 1870, and under the name of Ferdinand de Lesseps, received a first-class certificate, which it richly deserved, not so much as a new Grape, as a new fruit altogether. With me it is a strong grower, an abundant bearer, and of a beautiful golden colour. The fruit being scented with Strawberry, and tasting like barley-sugar flavoured with Pine-apple, according to some, and like new honey, according to others, is totally unlike that of any other known Grape. Here was, at least, a great curiosity, a pretty scented fruit, which few with their eyes shut would take to be a Grape. But every one does not like barley-sugar, or new honey either, and then, unfortunately, the berries were little larger than those of the Frontignan, and the bunches scarcely so long; and, though Ferdinand found many admirers, I never recommended anyone to plant it who had not seen and tasted it. I next tried what the effect of crossing Ferdinand with other Grapes would give, and raised another large batch of seedlings, some also from other crosses, which were all planted together. Some of these were exhibited September 6th, 1871. From them the Committee of the Royal Horticultural Society selected one for a first-class certificate, and which I named Dr. Hogg. Now I had great doubts about the value of this variety, and told the committee so. I knew it was a seedling from the Duchess of Buccleugh, and never could make up my mind what was its other parent, or if it had been crossed at all. Knowing that all the race of Grapes, comprising Muscat Muscadine, Chasselas Musqué, Joslin's St. Albans, which were the result of a cross between the Muscat of Alexandria and Royal Muscadine to which the Duchess of Buccleugh belongs, were, though very high-flavoured, dreadfully subject to crack, I feared the same might be the case with mine, and never would recommend it to anyone. Besides growing in a north border of a Geranium-house, it never was very well ripened, and appeared not to retain its high flavour after it was ripe. Now, however, when it is out, and in other hands, as many no doubt have heard, it is proving one of the best Grapes in cultivation. With me it has never cracked a berry, and whilst quite equal in flavour to the Duchess of Buccleugh, is twice the size, bunch for bunch. The Golden Queen, to which a first-class certificate has been awarded, is a seedling between Ferdinand de Lesseps and Black Alicante; it fruited for the first time last year in a pot, standing on the border of my Fig-house; finding that it had made a root through the bottom of the pot, I broke the pot to pieces, and "hilled" up the ball with fresh soil. No one expects a Vine that has fruited in a pot to do much the following year, but to my surprise this has carried thirteen bunches perfect in every respect this season. The bunch and berry are exactly alike in shape to the Madresfield Court, but in colour it is a bright gold. The flavour is that of a Muscat of Alexandria without any of the aroma peculiar to the Muscats, being, in fact, a rich, fleshy, sweet Grape. The foliage shows its hybrid origin, being strong, dark looking, and feeling to the touch more like that of a Fig than a Vine. The wood is bright cinnamon in colour, and taking fruit and Vine together, it is perhaps the most beautiful Vine ever seen growing. From the large amount of water used in the Fig-house, and the little heat employed, mildew attacked most of the Vines in that house, but the robust foliage of this variety appeared almost mildew proof. Lastly, only two kinds under these unfavourable circumstances were really ripe in this house, and the Golden Queen was one of them; many have only half-ripened their wood, and the thinnest shoots of this are as dark in colour, and as hard as the thickest. At the time the above was written the keeping qualities of Golden Queen could only be inferred, but fruit remained on the Vine in good condition till it broke into leaf this spring, proving it to be a worthy companion for the best of the black keeping varieties. This Vine has this year carried sixteen bunches, the best of which I sent, at the request of M. Van Houtte, to Ghent, to be figured in his "*Flore des Serres*;" some to the Royal Horticultural Society's fruit committee, to let them see that it maintained its character; and others to various eminent horticulturists, and no one, as yet, has pointed out a fault either in the habit of this plant or its fruit.

Chilwell.

J. R. PEARSON.

Efficacious Remedies for the Vine Pest.—The Abbé Moigné says that two remedies, or rather two insect-killing substances, have proved to be efficacious in destroying the Phylloxera. In Cognac, M. Mouillefer, professor at the Agricultural School at Grignon, and delegate to the Academy, has tried with success the sulpho-carbonate of potash, proposed by M. Dumas. In the proportion of one-thousandth dissolved in a litre of water, this solution proved quite harmless to the plant; but at the end of a few days, by the toxic vapours

it disengaged, it was able to mete out prompt justice to the devastating insect. But it was expensive, and it was necessary to find a means of manufacturing it economically on a large scale. This problem was scarcely proposed when it was solved. It was the employment of alcohol that rendered the preparation of this salt slow and limited to small quantities. M. Valancecimes, director of the works at Dorvault's Centrale Pharmacie de France, at St. Denis, found that by reacting with strongly-concentrated sulphide of carbon upon carbonate of potash, its transformation into sulpho-carbonate could be effected directly without the intervention of alcohol. MM. Romein and Petit, at Nîmes, and M. Balbiani, at Montpellier, on their side, tried coal-tar, and with entire success. The proportion of coal-tar required—several thousand kilogrammes to the hectare (2½ acres)—seems at present enormous; but, by a judicious distribution of the substance, there is no doubt that the quantity may be considerably diminished.

Fruit of Tacsonia Van Volxemii.—I cannot agree with your correspondent as to the agreeableness of this fruit. In addition to that species, I have now in fruit *T. eriantha* and a variety sold to me under the name of *T. hybrida multiflora*; also *Passiflora acerifolia*, with fruits like black Grapes covered with a fine bloom; *P. cœrulea racemosa*, fertilised with *P. cœrulea* (this variety will not set with its own pollen), *P. Impératrice Eugénie*; another with deep purple flowers, the name of which I do not know; and *P. cinnabarina*, otherwise known as *Disemma coccinea*. In past days I have fruited many other members of this favourite family of mine, but have failed to find amongst them all a fruit even passably palatable, excepting, perhaps, *P. edulis*. With the tropical *Granadillas* I have had no experience. That they all might with impunity be eaten, I have no doubt. It is to be regretted that the Australian *P. cinnabarina* is not an agreeably-flavoured fruit, as it bears so abundantly with little or no care, and the fruits are very succulent; their smell, when ripe, is not unpleasant, but the taste is insipid. Whether they could be utilised by conversion into a "rob" or jam would be worth a trial, which I commend to the professors of the cuisine.—J. M., Hawkechurch, near Arminster, Devon.

The Beurre Clairgeau.—This is a well-known and favourite dessert Pear in Jersey, and Mr. Pond, a neighbour of mine, has one of the best specimens of it with which I am acquainted. His tree was planted eight years ago, and is grafted on the Quince. The second year after planting, it produced a Pear weighing 1 lb., and it has since continued to bear very fine fruit, no Pear having been picked from it, less than 1 lb. in weight. This year it bore thirty-five splendid Pears, weighing 56 lbs. The soil in which it has grown, is a deep sandy loam, and the tree has been watered with liquid manure in dry weather. André LeRoy in his "Dictionnaire de Pomologie" says this Pear is a moderately vigorous grower, and a great bearer. The fruit has a white flesh, which is melting, juicy, and not very gritty, the aroma being agreeable and delicate. It is very variable; however, as regards both shape and quality; although sometimes second-rate, it is generally first-class. Its size is always large; in 1851 the Horticultural Society of Paris awarded a medal to a large and fine fruit of it. As regards maturity it seldom ripens before October, and rarely keeps beyond the first days of January.—RUSTICUS.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Stephanotis floribunda in Fruit.—I have at present two large fruit on a small plant of the *Stephanotis* in my stove; they are not yet ripe, and have been on the plant for nearly twelve months; they are still a bright green, and I have not increased in size for some months.—FRANCIS J. GERVAIS, Cecil Angler, Co. Tyrone.

How to make a Fruit-room ornamental.—My fruit-room is 70 feet long, staged all round, and has a centre stage running its full length. On this stage or table light-coloured Apples, such as Wellingtons and Golden Nobles, are laid in the form of diamonds, the strips being indicated by high-coloured kinds, with a circular patch in the middle of each diamond. Few flower gardens in summer, much less in winter, can vie with this arrangement.—KIRCHENER.

Excrescences on the Roots of Peach Trees.—I send you part of a root of a Peach tree in the hope that you will be able to tell me what the knots on it are, from what cause they appear, and what the remedy for them. The tree has been planted against a south wall two years in a good rich border. The roots are all like the one sent, and the tree has made no wood to speak of, whilst three others planted against the same wall have grown remarkably well this year. They have all been well supplied with water during summer.—E. J. R. The specimen sent is very curious. It shows an attempt to throw out adventitious buds, which first protrude the inner bark, so as to make it look like a case of false Fangli.

The Peach Nut.—A fruit, answering to the description of the Peach Nut (see p. 343), was, some three or four times, offered to me in Spain, under the name of *Frasquilla* (I write from sound, for I never saw the word in print). I was struck with the delicious flavour of the fruit, and, upon making inquiries respecting it, was told that it was a hybrid, produced by grafting a Peach upon a Pomegranate stem; this would, doubtless, account for the Pomegranate colour and Peach flavour of the fruit. I imagine it to have been rare at the time I was in Spain (1869), for, though I was liberally supplied with most fruits, I remember receiving but three or four *Frasquillas*.—J. M. WOODWARD.

INDOOR AQUARIA.

THE annexed illustration cannot fail to show how highly interesting a portable aquarium and plant case combined may be made when properly fitted up and arranged. Such combinations possess an interest peculiarly their own, and although their value may be unappreciated by those who possess gardens and plant houses, yet such cases of living interest are admirably suited to invalids and persons living in cities. Even in the most unfavourable localities for out-door vegetation, such indoor gardens may be replete with beauty alike secure from vicissitudes of weather or atmospheric impurity. Indeed, of all forms of vegetable life, aquatics or sub-aquatics, are best suited for indoor gardening in towns; but if the best results are to be obtained from such a pursuit, a commencement must be made under the direction of some one acquainted with the arrangement of a bit of rock-work suitable for such cases, the kind of plants with which they should be furnished, and the best material in which to grow them. For cases like that now represented hundreds of rare and beautiful plants are suitable, and also plants neither rare nor costly, but yet not less interesting. Many Grasses, Sedges, Cyperus, and Ferns grow well in such cases if elevated an inch or two above the water level. For submerged vegetation we have *Valisneria*, *Anacharis*, *Charas*, the pigmy-blossomed *Water Lily*, the Hawthorn-scented *Aponogon distachyon*, fresh green disc-shaped sheath-rooted *Duckweed*, *Pontederia crassipes*, the hollow petioles of which are swollen and filled with air, and many other equally interesting plants, all of easy culture. In the hands of an experienced cultivator, many rare plants would thrive as well in a case like this as in a cool plant-stove; and then *Sarracenias*, *Cephalotus*, *Dionææ*, *Droseras*, and even one or two of the true Pitcher plants, as *Nepenthes phyllaphora* or *N. gracilis*, might be added, notwithstanding their reputed carnivorous tendencies. Given a few lumps of fibrous peat and a handful of fresh living *Sphagnum*, and even the gorgeous crimson-winged *Disa* might be induced to display its rich colours and fresh glossy foliage. Plant life, too, may be interestingly associated with animal life. In the water may be lizards, golden and silvery carp, brown-speckled and green frogs, and a whole colony of water-beetles and snails; while, flitting about overhead among the plants may be butterflies of many hues, and a few of the most showy kinds of moths. Are we, then, to capture such insects on the wing, and introduce them? No, they must be bred in their new home, and this simplifies the whole affair, for specimens of all the more showy butterflies may be bought at almost any naturalist's, in the chrysalis state, for at the most a few pence each; and these, if placed in a little box (without a lid) of dry earth, and introduced to the plant case, will "come out" in due season, like other butterflies, and will delight us with their elegant forms and brilliant colouring. Even the common white speckled garden-spider added to such a case tends to give it life and interest. This aquarium is divided into two parts; the lower one, as will be seen, for water, fish, and true aquatics; the upper one for sub-aquatics and other plants. B.

Kerr's Vaporising Stove.—We (the *Irish Farmers' Gazette*) have in operation that very ingenious contrivance for burning paraffin, crystal, or rock oils—namely, "Kerr's improved vaporising greenhouse stove." This little stove is very simple, portable as a stable lantern, and fed and trimmed with as much facility as an ordinary lamp. Each is provided with a vaporising dish somewhat on the Polmaise principle to hold water; through the centre of the dish the heat passes, and carries with it a portion of vapour, thus obviating the atmospheric aridity which in many instances, in plant-houses, especially, is so much to be deprecated. When working, this stove does not appear to give off, in the least, anything in the shape of either smoke or sulphurous irritant gases, unwholesome to animal or vegetable life. In fact, on the contrary, we are assured by Dr. Cameron that the heated air diffused by this stove is such as would serve, rather than injure, plants. For those small unheated greenhouses attached to town dwellings, one should think this neat, cleanly, and portable little contrivance would be well adapted and quite capable of keeping King Frost at bay. These stoves illuminate as well as heat. One of them will burn for twenty-four hours without attendance, at a cost of about threepence.



AN AQUARIUM AND PLANT-CASE COMBINED.

GARDENING FOR THE WEEK.

AND AMATEUR'S CALENDAR.

Hardy Flowers, Alpine Plants, and the Wild Garden.

We have now entered on that season of the year when Nature herself appears to have the utmost difficulty, even under the most favourable circumstances, in finding the necessary material wherewith to complete the hybernal link in Flora's chaplet. The few flowers that betokened her late autumnal but declining vigour have been sadly marred by two consecutive nights when the thermometer indicated some 12° of frost, and, covered as the ground now is with snow; we will leave the flowers at rest under it for the present. Rest, however, to the flowers does not by any means imply rest to the cultivator; he has his work to do even at this dull season. We will presume that the dead and dying tops of all his herbaceous plants in the select borders have been by this time removed and deposited in the most out-of-the-way place available, ready for the crematory process previously described. In the wild garden such a clearance is, however, unnecessary; as I before said, leave these souvenirs of the past, as Nature intended them, to form a protection, and to aid our future prospects. What, then, is to be done with the borders thus cleared? The usual practice is to give them a dressing of manure and then dig them over. That this is the best form of practice I very much doubt. With the process of digging, the idea of a spade is naturally inseparable, but that very implement should be all but proscribed from borders of this class, except in so far as planting is concerned. My advice is, to first hand pull all the larger weeds; these will have gone ahead since hoeing and raking became impracticable; carefully remove such as are growing about the crowns of any of the plants—too often are these passed over during the summer clearings—but they are liable to injure, by their dense growth, the more slender growing occupants of the border. Having so done, a nice dressing of old thoroughly well-rotted manure should be distributed, or, what I believe to be better still, a concentrated manure, such as may be made by mixing "night soil" with the burnt ashes—resulting from the burning of all the old rubbish—these ashes constitute not only a most perfect disinfectant, but are equally potent and absorbent, and a small quantity goes a long way; where earth closets are used, the accumulation of the season, after being once or twice turned over, will answer the purpose admirably. A sharp frosty morning, it may be added, is the very best time for preparing this material. This done, a nice dressing of fresh loam, just sufficient to cover the manure, may be applied; or, failing that, the surface should be turned over to a depth of 3 or 4 inches, for which purpose nothing is better than one of Parkes' five-tined steel forks, all the more suitable when it is nearly worn out. This advice may frighten many people who believe in deep digging, trenching, and what not; and, be it remembered, that I am no disbeliever in these operations as applied to general culture. My experience clearly leads me to the conclusion that, after the border is planted, deep digging means wholesale slaughter of roots and, not unfrequently, of plants also; added to which, all herbaceous plants (peat-loving ones excepted) like a firm soil to root in. One of our borders has not been dug for twelve years, receiving nothing beyond a dressing of manure, topped up with a little fresh soil each year; and, in spite of its hardness, the plants thrive wonderfully. That there is a time for deep trenching I hope to show when I deal, in a week or two, with the formation of one of these borders. Such plants as herbaceous *Lobelias*, *Tropæolum tuberosum*, some of the tenderer *Oxalises*, *Linum narbonneuse*, *Tritonia aurea*, *Tricyrtis hirta*, the New Zealand Flax, and such plants as are of at all doubtful hardness, should be protected by two or three shovelfuls of light leaf mould or ashes placed above or around them. The leaves of all *Yuccas* should be tied together with a few thick strands of soft matting, so as to prevent the snow from damaging the centre growing bud, and otherwise destroying their generally graceful contour; this, if not already done, should be seen to at once. The Aloe-leaved *Yucca*, with its beautifully variegated form, though generally esteemed tender, may be further protected by a good thick straw rope twisted from the ground to the extreme tip of its leaves and tied to a stake; a few shovelfuls of leaf soil over the root will prevent the frost from penetrating the ground; and, under these conditions, it will stand any ordinary winter. All Alpine plants in pots will now have been securely plunged in ashes or stowed away in frames; the former will require little attention beyond keeping a sharp eye for slugs. It is by no means a bad plan where large numbers are grown in pots, and wherever a collection or even a selection is cultivated (it is always advisable to have a reserve army to fill up gaps that are sure to occur), to have at the bottom of the border wherein they are to be plunged a layer, of say 3 inches, of rough home-made asphalt; with a good slope from back to front,

this is a capital preventative to worms, which often play havoc by loosening the foothold of slender growing plants. In the process of plunging always have a few labels by you, as you are sure to find some that have become decayed or so far obliterated that before spring they will have become illegible. Those in frames should have the lights thrown off every day when it does not absolutely freeze or rain—so as to keep down damp—which is much more to be dreaded than frost with this class of plants; a few slices of Potato may be placed among the pots with advantage; turning them over on a fine day is sure to yield a harvest of slugs, especially the small ones, which otherwise are troublesome to find, as they generally retire into the interstices of the soil or down the sides of the pots after they have completed their nocturnal depredations. Where Alpine plants are grown in a natural way on rockeries, it is a capital plan, after the trimming and weeding, which I will presume has already been done, should a heavy fall of snow occur, to heap it on the rockeries, bearing in mind that you cannot put too much on; it is the true protection which Nature affords her Alpine children in their native habitats, and no better one can be found. The same practice may be very beneficially adopted with ordinary frames, banking the snow lightly round the sides.—JAS. C. NIVEN.

Flower Garden and Pleasure Grounds.

With the exception of occasional sweeping and rolling of gravel walks, lawns, and Grass belts or verges, little for some time to come will be required to be done in these departments, except in cases in which alterations of groundwork of any kind is in progress; and, wherever such work is in hand, it should be pushed forward with all possible expedition. In the meantime, take advantage of the early part of frosty mornings, whenever they occur, to get forward with any kind of work which will necessarily involve wheeling, carting, or other heavy traffic; and, wherever it is necessary to do this upon lawns or greensward of any kind, planks should always be used for wheeling upon. Laurels and other evergreen shrubs in conspicuous situations may have dead boughs removed from them, but all extensive cutting back or pruning of live wood should be deferred until spring or until all danger from severe frost is over. Many hardy berry-bearing plants, the fruit of which is getting ripe, are becoming very ornamental, such as the *Crataegus Pyracantha* or evergreen Thorn, *Cotoneaster Simmondsii* and *microphylla*, *Skimmia japonica*, and others. Wherever, however, birds abound, it will be necessary to protect them by means of a net or otherwise, or they will quickly disappear. The greenfinch, and some other hard-billed birds, disfigure the berries to get at the seeds, while the blackbird, the thrush, and the missel thrush swallow them whole. All such half-hardy plants as *Magnolias*, *Pomegranates*, *Ceanothuses*, and *Tea-scented Roses*, trained to walls or pillars should at once receive a thin thatching of straw, dry Fern fronds, or some similar protecting material; while such winter-flowering plants as the *Chimonanthus fragrans* and the *Jasminum nudiflorum*, which in sheltered situations are now coming into flower, and to which it may be desirable to have free access for the purpose of gathering the blooms, should be protected by means of a moveable curtain of frigi domo or mats. In order to ensure, also, the safety of such plants as the various sorts of *Yucca*, *Tritoma*, &c., which may be growing upon lawns or on the margins of shrubby borders and similar situations, place a portion of straw, dry Fern, or any other littery matter round their base, keeping it in position by means of a few boughs or pegs fixed over it. The surface of beds containing the roots of *Fuchsias*, *Erythras*, *Aloysias* or Japanese Lilies, should now be covered to the depth of 3 or 4 inches with sawdust, old tan, or cinder ashes. Place hand-glasses, small frames, or cloches, upon well-established plants of the Christmas Rose in order to obtain fine pure white blooms of it with long flower-stalks. Let the tubers of *Dahlias* and the bulbs of *Gladioli* be safely stored in some dry situation out of the reach of frost. Attend to the wants of bedding plants; exclude frost by covering them up, or, what is better, if possible, by the moderate use of fire heat, and get, as soon as possible, the entire stock of plants placed in structures furnished with the means of supplying this necessary desideratum.—P. GRIEVE, *Culford, Bury St. Edmunds*.

Roses.

In protecting standard Roses, worked on the Briar, all that is necessary is to bind some hay or soft straw round the head where budded or grafted. In the case of dwarf Roses, some hay, straw, or rough litter, shaken lightly over them, will be found to be sufficient protection. If a Rose tree, which has got frozen over night, is sheltered or covered over the following morning before the sun reaches it, it will be found that in nine cases out of ten it will be saved. The part which requires most protection is the point of union between the graft and the stock. I have examined many Rose trees that have been killed by frost, and have always found that failure

occurred at that point. Some Rose trees, which I planted under the shade of a north wall, have never required any protection, for in winter they are never subjected to sunshine, and are often frozen for a week or ten days together; yet, when the frost is gone, I have found them to be uninjured. These have been planted in order to secure a few good flowers for about three weeks, during the later part of July and beginning of August. The first bloom of Roses is then over, and, where a large supply is required, trees thus situated yield some fine fresh flowers, while others, in exposed situations, are burnt by sun-heat.—H. G.

Orchids.

The bright scarlet flowers of *Sophranitis grandiflora* contrast strikingly with those of other Orchids of more delicate colours that are also now in bloom, such, for instance, as *Lycaste Skinneri*, *Calanthe vestita*, *Veitchii*, *Pilumna fragrans*, *Cypripedium insigne*, *C. venustum*, *Dendrobium moniliforme*, *D. heterocarpum*, *Odontoglossum Hallii*, *O. Pescatorei*, *O. Bluntii*, and *Oncidium aurosum*. In order to preserve the blooms of these as long as possible free from spotting and in good condition, those unprovided with a show-house should place them at the dry end of the ordinary Orchid-house, in a temperature varying from 55° to 60°. *Lycaste Skinneri* is one of the best winter and spring-flowering Orchids which we have, and, when well grown, yields abundance of bloom, which is useful for cutting. It will grow well in a temperature varying from 60° to 65°. *Cypripediums* are also useful in the way of furnishing cut bloom; and, where many varieties are grown, a supply of flowers may be had throughout the year. When growing, these Lady's-slippers require abundance of water; they should be potted in manure from a spent Mushroom-bed, sharp sand, charcoal, and a double quantity of not-too-fibrous peat, the whole placed over efficient drainage, and set in a temperature of from 60° to 70°. *Celogyne cristata* will require less water than has hitherto been given it; and, as the flower-spikes appear, the syringe should not be used, but sufficient water must be given at the roots to prevent the bulbs from shrivelling. Little potting need be done this month; but time may be profitably spent in sponging and cleaning the plants from dirt or insects.—E. CULLEY.

Indoor Fruit Department.

Vines in pots which may have been plunged in bottom-heat, in order to promote growth, should be removed and set on a hard bottom, such as a wooden shelf or on a board placed on the top of hot-water pipes, as soon as their shoots are from 2 to 3 inches in length; and such rods as may have been suspended in a horizontal position, in order to ensure a more even break, should be tied into their permanent places before the young growths have become more than 3 inches in length. The weakest shoot from such buds as show two growths should be rubbed off, leaving, however, the one which shows the best indication of a good bunch. Permanent Vines started about the beginning of last month will now be swelling their buds. These should also have their tops tied up, and the temperature may be increased 5° above that previously recommended. Continue to stir up the fermenting material which rests on the inside border, and if the heat is beginning to decline add a little fresh material. Care should now be taken to prevent cold air from entering the early Vinery. It is often of great advantage to stuff all crevices about the ventilators, underneath the doorway, &c., with the view of maintaining a uniform temperature when the exterior cold is excessive. In many instances the earliest Vinery will be started about the first of December, and former directions may be applied in such cases, but a little fire-heat will now be required from the first. Queen Pines which have been resting with the view of obtaining early fruit will now require particular attention. To have fruit ripe in May the plants must be started into growth at once. Where there are large quantities to choose from and only a dozen or two wanted as an early batch, those most open in the centre should be selected; tie the foliage of such plants carefully up in order to prevent them from getting broken while being removed; take off all the small leaves at the base of the stem, remove all the loose soil well down to the root, and top-dress with a mixture of strong loam and horse droppings; into this a mass of young roots will soon be emitted. If the plunging material is much exhausted most of it may be taken out and new material substituted, but the heat is produced in a more desirable way when a little of the old is mixed with the new. In plunging, set the plants at convenient distances apart, according to size; press the plunging material firmly about the pots, as this, when new, generally falls away very much before the fruit is ripe. Bottom-heat should be allowed to rise until it reaches 90°, when care should be taken that it does not exceed that point. A slight watering should be given to settle the fresh top-dressing down amongst the old soil, but do not give a thorough soaking until the heat is up, when every particle of the ball should be

moistened with water not cooler than the bottom-heat; keep the atmospheric temperature for these at 70° by day and night with fire-heat, allowing 10° more during sunshine.—J. MUIR.

Hardy Fruits.

Cherries are universal favourites, both for pies and dessert. Among the finest varieties may be named Governor Wood, perhaps the very finest in flavour; White Heart, Werder's Early Black, Waterloo, Monstrous Heart, Downton, Buttner's Black Heart, Bigarreau, Frogmore late Bigarreau, Early Rivers, and Transparent. Then among free growing and fruiting kinds there are a whole host of Dukes, Kentish, Florence, Early Purple Gean, Morello, Bedford Prolific, and Belle Agathe, the latest of them all, which it is said the birds will not eat. Of Peaches it is difficult to beat such varieties as the Royal George, George the Fourth, Noblesse, Barrington, Grosse Mignonne, Teton de Venus, Bellegarde, Violette Hâtive, Chancellor, Rivers, Early York, and Early Alfred, Lord Palmerston, Prince of Wales, Late Admirable, and Salway. Among Nectarines may be taken Rivers' Pine Apple and New White, Pitmaston Orange, Elruge, Downton, Hardwicke Seedling, Violette Hâtive, Balgowan, Humboldt, Stanwick, and Newington. My favourite Apricot is the Kaisha, the quality and flavour of which is as much superior to those of most Apricots as a Green Gage is to other Plums. It also makes the most delicious preserves, and the tree seems hardier, and escapes the spring frosts better than other varieties. The Moor Park is no doubt the next best, and only those in search of variety now care to grow such varieties as the Breda (said, however, to be best for a standard), Red Hemskerk, Roman, Royal Peach, or Turkey Apricots. Apricots are wonderfully well adapted for growing on cottage walls or gable ends, and do exceedingly well in such positions when left to grow in a free manner, without much pruning, in the form of half standards. Mulberries, white and black, should be planted much more plentifully than they are. When they arrive at a considerable age they mostly fruit freely, and the fruit is in universal favour with high and low for pies and preserves. They do best in rather sheltered situations, and in the rich warm dark coloured soils of old kitchen gardens.—D. T. FISH.

Kitchen Garden.

It is advisable to make a sowing of Cucumbers now, in order to furnish plants for putting out about the middle of next month, and if the seeds are soaked in warm water for fifteen or eighteen hours they will germinate much quicker than they otherwise would do; place the vessel containing the seeds on or near the hot-water pipes, so as to secure a steady temperature of 85° or 90°. I have frequently soaked them thus till the seeds sprouted, when I wanted to push the plants on, and when afterwards planted in pots of warm light soil the plants have appeared in three or four days. Almost every grower has some favourite Cucumber for early forcing; but I may mention that for the supply of a family Telegraph is a reliable variety. Where, as in many places, glass structures are limited, Cucumbers may be successfully grown in pots or boxes in any house in which a suitable temperature is kept up, such as one in which flowers are forced. They may be elevated on back shelves and the shoots trained over the pathway or down the rafters. Thus treated they do not obstruct light from plants underneath them. Where new Potatoes of good flavour are required early, a few selected tubers of the old Ashleaf or any other good early variety may be potted in 48-sized pots, one tuber in each pot, and placed in a Vinery or Peach-house just started. Never allow more than one shoot to grow from each tuber; more growth only tends to produce small tubers and retard maturity. When they come up, and before they become pot-bound, either plant them in a prepared hot-bed, or pot them into larger pots, with the view of growing them on in the house till the crop is fit for use. I prefer the former plan, when it can be conveniently done; but a fair amount of success may be obtained by the latter method, if the pots can be placed in a light position—success or failure depending, in fact, in a great measure, upon this; have all leaves raked up and stacked in a convenient place for making hot-beds, as the season advances. Oak leaves are the best for this purpose, and most lasting. If early Radishes and Carrots are required, a hot-bed may now be made up for them, composed of about equal portions of leaves and stable-dung; and, when the heat has become steady, apply about 5 inches of light sandy soil, and sow early French Horn Carrots in shallow drills 6 inches apart, and afterwards scatter thinly a few Radish seeds all over the surface. The Radishes will be drawn before the Carrots require the space. Whenever severe frost sets in, and it becomes necessary to use protecting materials for Celery and other crops, the plants should always be allowed to remain covered till everything is completely thawed.—E. HORDAY.

THE ARBORETUM.

BONAMY'S WEeping BIRCH.

THIS remarkable form of the Birch was raised by Messrs. Bonamy, of Toulouse, and was first shown by them about eight years ago. Our figure (from the *Revue Horticole*) gives a good idea of the habit of the tree. In the old variety of Weeping Birch, the branches fall with so perceptible a curve as to give a rounded appearance to the upper part of the tree; but, in this new Weeping Birch, each branch hangs down almost perpendicularly, forming an acute angle with the trunk. This peculiarity gives to the tree a veritable weeping aspect,



A new Weeping Birch.

which is enhanced by the flexibility of its swaying limbs, and the varied tints of its foliage.

FERTILISING AUCUBAS.

THERE is one condition which is quite essential to the successful fecundation of a plant, that is, that the male and female organs attain their perfect development at the same time, and this is almost always the case, when both organs are found in the same flower. It is otherwise, however, with Monœcious or Diœcious plants. Of this, the *Aucuba* is an example, and, although in its case it is quite possible for fecundation to take place naturally, it is desirable to give assistance in order to ensure the production of a quantity of fruit. The male plants have a small four-toothed calyx, a four-petaled corolla, and four short stamens alternating with the petals. The females have (instead of the stamens) an inferior one-celled ovary, surrounded by a fleshy epigynous disk, the style short, thick, and tumid at the base, the stigma orbiculate, and the ovary containing a single ovule. The fruit is a one-seeded berry. The flowers are insignificant. Female plants were first brought into this country; no fruit was therefore seen until the introduction of male plants by Mr. R. Fortune in 1861. The berries are very beautiful, of a bright coral red, and are borne in profusion, rendering the bushes exceedingly ornamental. The male flowers are small, and, as they generally

open before the female ones, it is desirable, in order to secure a good crop, to place the latter plants in frames or other forcing houses that they may flower as early as the male plants, and so be ready for fecundation at the same time. Another method is to collect the pollen from the male flowers and store it carefully for use, as it retains its vitality for a considerable time. Amateurs (I speak from experience) may obtain good pollen from any of the principal nurserymen. I procured a shilling packet from Mr. Standish, of Ascot, and artificially impregnated my plants. I watched the flowers open, and with a camel-hair pencil placed a small portion of pollen on the style; in the course of a day or two it was apparent which of the blossoms had been successfully fecundated. I obtained in this manner a quantity of berries. The *Aucuba* is a very ornamental plant; it is better to grow it in small bushes for table decorations, its glossy green foliage and splendid berries rendering it exceedingly attractive; it is very useful in the flower garden, as, being quite hardy, it may be employed to fill up the beds from which summer flowers have been removed. It is of vigorous habit, and has the merit of enduring and even thriving in the atmosphere of our crowded towns and cities. The *A. japonica* bears the brilliant red berries of which I have spoken; its leaves are sometimes variegated, and blotched with pale yellow. In the *A. himalaica*, another variety, the berries are orange-red, the foliage wholly green.

W. N.

JAPANESE VEGETABLE WAX TREE.

THE *Japan Mail* contains some further particulars respecting the preparation of the vegetable wax produced in Japan, and chiefly exported to England. This wax is obtained from the fruit or, more correctly, berry of the Wax tree. The tree, which is a species of *Rhus* (*R. succedanea*), flourishes more especially in the southern provinces of the empire. The fruit, which usually ripens about the month of October, is gathered when ready, and cleansed from its loose outer husk, a process which is accomplished in large wooden vessels with wooden malls, similar to those in use for cleaning Rice. The residue product, available for the manufacture of wax, is a Bean-shaped kernel of the size of a Lentil, possessing an unusual degree of hardness, of a dark yellow wax colour, and offering a saponaceous exterior to the touch. The kernel is subsequently exposed in a sufficient degree to the steaming process, which deprives it of its extreme hardness, and allows of its oily properties being more easily extracted in the pressing stage. In this process the oil is received into small earthen vessels, in which it subsequently hardens to a bluish-green mass, in the shape which it is commonly met with in home consumption. Wax so produced is impure, and is only suitable for certain descriptions of candles and for wax-thread manufacture for home use. In order to render it merchantable for the exporter, the following refining process is resorted to:—The wax is boiled with a lye until it is brought to a perfectly fluid state, and is then drawn off into a reservoir filled with clear water, the pure wax, which floats upon the surface, being removed. The mass is then exposed to the sun's rays for a period of fifteen or sixteen days, during fine weather, for the purpose of bleaching it, at the expiration of which time the wax presents a dirty white crumbling appearance and a strong tallowy smell. The boiling and bleaching are repeated with the view of rendering the refining process still more complete, the only difference being that, instead of lye, pure water alone is employed in boiling it. The product is a clear white powder, which, in place of its former crumbling appearance, has assumed an almost crystalline formation. The last stage of preparation for export consists in rendering the powder a compact mass, which is effected by melting it over a fire with a little water (in order to avoid burning), and running it off into flat vessels. The product thus obtained, and known to commerce as vegetable wax, differs exceedingly from white beeswax, with which it possesses the properties of colour, brittleness, and similarity in its fan-shaped fracture in common. The only characteristic difference may be said to be in the odour, the beeswax giving off a refreshing aromatic scent in burning, while the tallowy smell of the Japanese wax is far from being agreeable. Vegetable wax is chiefly used in England in the manufacture of wax candles.

The Pepper Tree.—When in Nice one winter, I was greatly pleased with some evergreen trees growing in the public gardens there, called the Pepper tree, the botanical name of which is *Schinus Molle*. Can you inform me if this tree is hardy in England, and where one can be seen growing, and to what country it is indigenous? I have seen it also in Naples and Palermo, where, if I remember, it grows even larger than at Nice—say, from 20 to 30 feet in height.—E. W. GERE, *Sandhurst Villa, Leamington*. [The Pepper tree is a very

graceful object in warm temperate countries; but we have never seen it thrive out of doors in England. It may, however, live out of doors in some parts of Devon or Cornwall. It thrives in the cool fresh climate of San Francisco. In London gardens it grows freely as a greenhouse plant; but never assumes the graceful habit that it does in the warmer parts of the shores of the Mediterranean.]

The term "Fir Tree."—This is simply the popular name by which certain species of the genus *Abies* are known. As is usual with popular names, it is applied very indefinitely to different kinds of trees belonging to this genus in different parts of the world. Some botanists make three genera of the trees grouped by others entirely under one genus, but the latter divide this genus into two sub-genera, namely, *Picea* and *Tsuga*. It seems most proper to apply the term "Firs" to the sub-genus *Picea*. The *Abies* proper includes the Spruces; the *Tsuga* includes the Hemlocks or Hemlock Spruce; and the *Picea* the Firs proper. These grow mostly in cold climates. They include the Balm of Gilead Fir, the Noble Silver Fir, the Great Silver Fir, the Silver Fir, the Purple Cone Silver Fir, Nordman's Fir, and a great variety of others. In the Spruces proper the leaves are short, needle-shaped, and distributed around the branches, while the cones are nodding or pendent with persistent scales. In the Hemlocks or Hemlock Spruces, included in the sub-genus *Tsuga*, the leaves are flattened and petioled, and arranged as if in two rows. In Firs the leaves are somewhat in two rows, but the cones at maturity are erect, and the scales fall away from the supporting axis.—H.

The Best Time for Moving Evergreens.—Your correspondents differ greatly in their opinions as to the best time for transplanting evergreens, some advocating spring, some summer, and others autumn as the best time for moving them; while their combined experience goes to show that evergreens may be transplanted at nearly all seasons of the year, the winter months perhaps excepted. Nevertheless there must be a general best time for the transplanting of evergreens—a time when the life of the plant can be ensured, and when it can be moved without impairing or at most but slightly impairing its vigour. That time cannot be in the spring when the sap has already begun to move, because, even should the plant live, the check given to it by the cutting of its roots would impair its vigour, at least for the current year; and the same consequence in a general way, must, of necessity, pertain to summer transplanted trees, to say nothing of the danger belonging to the moving of some species of Conifers, the leaders of which are of so much importance. Autumn, therefore, is the best time for transplanting evergreens, say from the middle of September to the end of October, or more definitely still as soon (the weather being favourable) as the plants have made their terminal buds. Why? Simply because the sap of the plants has not then become inactive, and the soil is sufficiently warm to induce the formation of new roots, which serve to re-establish the plants in their new situations, thereby enabling them to push vigorously and without check the following season.—PROPAGATOR.

The Uses and Functions of the Leaf.—The office and utility of leaves are becoming better understood by cultivators than formerly; yet we find a good many still adhere to the old belief that the sun's rays directly shining on forming fruit are what perfect it, independently of other influences. On this subject, theory and practice have been invariably found in perfect accordance with each other. The principles of physiology teach us that the sap of a tree, when it passes in at the roots, remains nearly unchanged in its upward progress through stem and branches, until it reaches the leaves, where, being spread out in those thin organs to light and air, it undergoes a complete change, and thus becomes suited to the formation of new wood and new fruit. Strip a rapidly-growing tree of its leaves at mid-summer, and from that moment the supply of new wood ceases, and it will grow no more till new leaves are formed; and if it have young fruit, the growth and maturity of the latter will cease in the same way. A few years since, a Yellow Gage Plum tree lost all its foliage from leaf blight, when the Plums were not fully grown, and while yet destitute of flavour. The fruit remained stationary and unaltered, until, in a few weeks, a second crop of leaves came out. They then swelled to full size, received their crimson dots, and assumed their honied sweetness of flavour. The object of pruning should be, therefore, to allow the leaves to grow to full size without being injured from crowding. We find the following corroborative fact stated in a late number of the *New England Farmer*:—We once knew an intelligent lady strip her Grape Vines of a portion of their leaves, in order to let in the sun and ripen the fruit; but, to her surprise, where the leaves remained as Nature had disposed them, the Grapes were the earliest, and every way the best. This led her to investigate the matter, when she was delighted to learn that the leaves were not only the protectors, but the caterers of the fruit, constantly elaborating and supplying it with the pabulum it required to bring it to perfection.

THE MIGRATION OF USEFUL PLANTS.

LITTLE is known of the travels of the first plants of cultivation until at length we trace the fruits and cereals in Egypt, Carthage, Greece, and Italy, spots surrounded with a halo which time has not dimmed, visible landmarks in the history of man and of useful plants. Noah "planted a Vineyard;" and no doubt the Vine, with the Olive and other fruits, had crossed the fertile "wilderness" from Armenia and the shores of the Caspian, for it was only in the far East that the Vine, the Peach and the Fig, the Apricot and the Pistachio-nut, sprang unbidden from the fruitful earth. Other countries obtained them second-hand. Osiris presented the Vine to the Egyptians, and Bacchus distributed the Grape in those warm countries which a nude deity found it agreeable to visit; while other kind gods fetched the Orange from the Garden of the Hesperides, and planted it on the shores of the Levant. It seems that the Greeks obtained most of their fruits from the gods. The Olive, for instance, was produced by Minerva on some unknown spot, where Hercules found it and carried it to Greece, on returning from one of his expeditions. This may have been about the time that the golden implements of husbandry fell down from heaven on the banks of the Borysthenes. The practical Romans acquired their vegetables with the sword and spear, as Lucullus did the Cherry, which he conquered with Mithridates in Pontus; and whatever the Greeks had gained, supernaturally or otherwise, came to Rome, like the Cherry, by gravitation of conquest. Italy was poor in indigenous fruits, and probably had, at first, only the wild Mulberry, the Apple, Pear, and Plum, but she afterwards covered her slopes and plains with Olives, Oranges, Figs, and Vines, by energy and enterprise. We learn little of plants until long after the Greek Rhizotomæ or collectors of medicinal roots, Aristotle the pharmacopæist, and his pupil Theophrastus. Mago, the Carthaginian general, was an early authority, who wrote the first great work on agriculture, and Mago and Carthage were conquered, and his twenty-eight books carried to Rome, B.C. 146. At the same period stern Cato wrote only of useful plants, while Columella, at a later date, included a little fancy farming in his long discourse, and Dioscorides and Pliny treated of all known plants.

Distribution of Fruits.

The colonists and civilisers of the earth have been the distributors of its fruits. Even the commercial Phœnicians were among the early carriers, and advanced the Mulberry and silkworm from the furthest shores of the Mediterranean along the coasts they visited, by the same route over which so many plants have been conveyed from Nature's gardens in the East. The indigenous fruits of Europe were Crabs, Nuts, Berries, Masts, and Sorbs, the rest she obtained from their Asiatic birthplace, and in most instances *via* Rome, their great rendezvous in historic times. Of the Cherry we have spoken; the Apricot arrived there from Epirus; Apples, Pears, and Plums from Armenia; the Damson (Damascene) from Damascus; the Peach and Walnut from Persia; the Chestnut from Castanea, in Asia Minor; and the Pomegranate from Africa. The Fig-tree, which sheltered the founders of Rome when they were suckled by the wolf, had crossed with some early travellers from Syria, or from its halting place in Greece. Honoured in the future city, it was carried next the Vine in the processions of Bacchus; and modern abstainers from the worship of that god are no doubt aware that the corpulent deity derived his vigour from the sugared and succulent Fig, not from the Vine. The jealousy of the Athenians, which vainly forbade the exportation of the Fig, produced the economists, or informers called *sukophantai*, or discoverers of Figs, and gave us the word *sycophant*. A tree still more revered by Pagan, Jew, and Christian, was the Pomegranate, whose fruit was embroidered on the ephod, and carved on the porch of the Temple. Bacchus is said to have first twisted the dry, hard calyx adhering to the fruit into "the likeness of a kingly crown," thereby ambiguously keeping faith with a girl whose confidence he had won by promising her the crown which a diviner had said she was destined to wear. When at last she died from grief and hope delayed, the betrayer metamorphosed her into a Pomegranate tree, and affixed the crown to its fruit for ever. The device of Queen Anne of Austria was a Pomegranate, with the motto "My worth is not in my crown," and the French had a witticism, "*Quelle est la reine qui porte son royaume dans son sein?*" The Pomegranate migrated to Europe with the first flight of plants, and crossed to the West Indies and South America with the earliest explorers. It reached its furthest limits in high latitudes when monks conveyed it to a distant island in the northern seas, where it still ripens fruit of small size around London and under the shelter of the South Downs. But in our climate the juices of this famous fruit of the desert has no attractions, except to curious school-boys, and its thousand pips make it, in our estimation, a fit repast for blackbirds. It is in Egypt and Syria that its delicious acid can be fully enjoyed.

Distribution of Plants.

Man, especially the Roman, has been the distributor of plants, but climate governs their distribution, arranges their divisions, and sets limit to their migrations. The Romans could not borrow from the flora of the south so freely as we have borrowed from them, since the arborescent and evergreen character of vegetation towards the tropics renders it liable to be destroyed by a slight degree of frost at any period of the year, whereas the herbaceous plants and deciduous trees and shrubs of temperate zones escape the winter's cold by retiring from active contention with it. On the other hand our sun seldom scorches our vegetable visitors, unless they come from a land of mist, like the Sikkim Rhododendrons; but Italian summers are too hot for some of the plants from the north. The Romans collected everything that a splendid sky, without a tropical sun, permitted, and their gardens contained nearly all the vegetables now in use. They had even the Cauliflower, a highly artificial modification of the Cabbage, which is said to have been originated in Cyprus, where luxury kept a good gardener. In the days of primitive virtue, Cato restricted his account of the horticultural art to the cultivation of culinary plants, and of those used in chaplets; and the same spirit, dictating the laws of the Decemvirs, made *hortus* synonymous with *heredium* or inheritance (as it was practically to Naboth); and it made the families of the Lactucarii, Valeriani, and Fabii proud of their names. Taste became less severe under the Empire, and flower pots were introduced in windows, and even the houses of the poor in Rome had little gardens in front for ornamental plants—equivalent to our window gardens—while the villas had highly decorated gardens attached to them, and there were parks and pleasure grounds in the heart of the city. The favourite garden trees were the Pine, for its refreshing odour; the Bay, for its beauty and fame; and the Box, for its shade. Trees were regarded as the temples of the gods. "The simple peasants, savouring of antiquity, do still," says Pliny, "consecrate to one god or another the fairest trees, and we ourselves worship the same gods in the silent groves with not less devotion than we adore their images of gold and ivory in our stately temples."

We proceed to notice a few of the plants in their passage westwards in different ages, without attempting to fix the exact date of their arrival at different ages, or to settle disputed dates. Cæsar found in Britain the Apple, Hazel, Elder, Bullace, Sloe, Raspberry, and Blackberry; and his successors left us the Vine, Cherry, Peach, Pear, Mulberry, Fig, Damson, Medlar, Walnut, &c. In all probability, some of the trees cultivated in the gardens of Roman generals, or governors, in Britain, were afterwards lost, as would necessarily be the case with neglected plants, especially in the case of those whose seeds do not ripen in our climate; and they were re-introduced in the monastic age. The Sweet Chestnut, for example, had long passed from Sardis to Tarentum and Naples, where it was cultivated with much care and success, and the Romans would bring such a rapid-growing and favourite tree to ornament their English villas, as surely as they brought the Rose herself; and the disputants who denied us the Chestnut until late in the Middle Ages, are refuted by common sense as well as by Giraldus Cambrensis, who, writing in the twelfth century of the trees of Britain which Ireland wanted, mentioned the Chestnut and the Beech. As to the Sorbus, or true Service tree, there is no dispute; and it is singular that one of the few habitats where it is still found wild in England is in Wyre Forest, in Worcestershire, near the remains of a Roman villa, and of the orchard attached, in which, perhaps, it was first planted. The same orchard may have ripened the first of many of our fruits, sheltered, perhaps, by the first nursery of the narrow-leaved, or "English Elm;" and in the garden near may have been planted the first Rosemary and Thyme that had lately blossomed on Mount Hymettus. The Plane passed from Asia to Sicily, thence into Italy, and, as Pliny informs us, had reached the northern shores of Gaul before the year A.D. 79. The Peach was common in Gaul in the time of Agricola, so that these, with the Box and Poplar, followed the Cherry, which came here within five years of the settlement of the Romans. The Apple, though not perhaps native, preceded them by some German route, and had given a name to the British Avalonia, afterwards called Glastonbury; but it profited by the rural industry of the Romans, and soon spread over the whole island to Ultima Thule. Early among the fruits came the Walnut, called Juglans, Jovis glans, in remembrance of that golden age when the gods ate Walnuts and men lived on Acorns. We pause with the wandering fruits and flowers on the shores of the Mediterranean, to note down the names of a few that the Romans acquired, or the Britanni gained from their imperial visitors. It is time to notice the sudden cessation of migrations when the Empire and its gardens in Rome and Britain were trampled under foot by the Northmen. The Moors were more civilised conquerors than the wandering nations of the north, and they brought to Western Europe the Persian forage plant, Lucern (*Medicago sativa*), still called in Spain by the Moorish

name Al-fafa, and the Sugar Cane, which had then only the Atlantic between it and the West Indies and the future sugar States of America. Some of the flowers which Spain gained from Arabia may have been passed into Holland by Charlemagne, who lived on the banks of the Rhine in a country house with a large garden; but it is not easy to get a glimpse at the horticulture of that dark age, and Holland was trodden down afterwards by such ravagers as the "Wild Boar of Ardennes," who must have rooted up many of Charlemagne's flower bulbs; and it was not until after the fall of the Eastern Roman Empire, A.D. 1453, that the Ranunculus, Anemone, Tulip, Hyacinth, and Narcissus—which were all Oriental before they became "Dutch bulbs"—found a permanent home in Holland, having first arrived in the bales of Dutch traffickers from Persia, by way of Constantinople.

Introduction of Forest Trees and Shrubs into England.

England next began to furnish her gardens from abroad. They had been sadly trampled under foot, and their ruin was never more complete than during the comparatively recent Wars of the Roses. In earlier days every abbey and religious house had a carefully cultivated garden, and those south of Trent had their Vineyards; and even crusading barons, with some contempt for rural labour, had not visited the coasts of the Mediterranean without gaining some hints for their English gardens. Quit-rents were frequently paid in fruits and flowers. In 1205 Robert de Evermere held his lordship of Redham, in Norfolk, in petty serjeantry, by yearly payment into the Exchequer of 200 Pearmain and 4 hogsheads of wine made of Pearmain (perry). The Rose must have been extensively cultivated when vassals were bound to deliver them to their lords by the bushel. But the Wars of the Roses trampled down the Rose beds, and in the course of time a single Rose came to represent the bushel of Roses, just as the single Peppercorn did the pound of pepper, when a "Peppercorn rent" superseded the original bargain. A new era of gardening began after the reign of Henry VII., when the Middle Ages came to a close, and the great barons and proprietors were replaced by the English country gentlemen. Hops were introduced in 1523; orchards, for the sale of fruit, were planted in "the garden of England" by Henry the Eighth's fruiterer; great houses were built and surrounded with planted grounds, and their owners began to look abroad for shrubs and trees of ornament. Henry VIII. built Nonsuch, and encompassed it with parks full of deer, and laid out gardens and groves and walks embowered by trees, doubtless including the famous Pippin of that name, so that—

This, which no equal has in art or fame,
Britons, deservedly, do None-such name.

Hampton Court eclipsed even "Nonesuch;" Hatfield, Holland House, Theobalds, and Greenwich followed, with others too numerous to mention. Eighty-four foreign trees and shrubs were used at this time in the decoration of English gardens, and in the next reign a host of planters were seeking for new material. The Tamarisk was among the productions at Fulham—still famous for its historic trees—where Bishop Grindal so surrounded his palace with foreign and native foliage that his guest, Queen Elizabeth, declared she could not see from her chamber window for trees. Cecil's house at Wimbledon was also famous for trees and shrubs and Raleigh's at Sherborne for woods. Burleigh had the best collection of plants in the kingdom at his mansion in the Strand; and Gerrard, author of the "Herbal," who lived at the Physic Garden in Holborn, superintended the Lord Treasurer's grounds. Bacon, too, now formed his plantations at Gresham, and wrote his essay on "Gardens." Amongst the new plants the "noble Laurel," or Sweet Bay (*Laurus nobilis*), sacred to Apollo, and emblem of victory, paid its second visit to England; as did the Portugal Laurel, which was introduced into the Oxford Botanic Garden in 1648, and the common Laurel, which reached the West from the shores of the Black Sea by an unusual route. It came first to Constantinople, and was then sent by the German Ambassador in 1576, to Clusius, keeper of the Botanic Garden at Vienna. The "Plum of Trebisond," as the Laurel was called, arrived with a Horse Chestnut and other rare trees and shrubs, having narrowly escaped the dangers of winter weather and rough treatment. It was placed by Clusius in a stove, when nearly dead, and was saved and propagated and distributed amongst the friends of the botanist. We, however, obtained "this rare tree," as Evelyn called it, from Italy, and our oldest Laurel was brought from Civita Vecchia, in 1614, by the Countess of Arundel, who planted it at Wardour Castle. "The Fig of Spain," as ancient Pistol and others have erroneously called it, was re-introduced by Cardinal Pole, who planted it against the wall of Lambeth Palace when he returned from Rome, Archbishop of Canterbury, after the death of Henry VIII. Later still—a century ago—Pocock, the Eastern traveller, and predecessor of Dr. Pusey in the Regius Professorship of Divinity, is said to have brought back a

Fig plant from Syria, and to have planted one, at least, of the venerable Fig trees which are among the glories of Christ Church, Oxford.

The First Market Gardens.

Amongst the most useful plants, which had been long driven from our gardens and were now about to return, were the kitchen vegetables. Henry the Eighth's table was supplied pretty liberally from the Royal gardens at Richmond and Greenwich, where Melons and Cucumbers were now forced as they had been at Rome 1,500 years previously, and Grapes, Peaches, and Apricots were trained to the 14-foot wall at Nonsuch. The revival of gardening had commenced, but although Tasser, in his "Five Hundred Points of Good Husbandry," mentions 150 fruits and plants cultivated in gardens, including all the common vegetables, "kitchen garden wares" continued to be imported from Holland, and fruits from France, until market gardens were established about the year 1600; "before which," says Fuller, "we fetched most of our Cherries from Holland, Apples from France, and hardly had a mess of rath-ripe Peas but from Holland, which were dainties for ladies, they came so far and cost so dear. Since, gardening hath crept out of Holland to Sandwich in Kent, and thence to Surrey, where, though they have given £6 an acre and upwards, they have made the rent, lived comfortable, and set many people to work." A new continent gave us at this time the Potato, and sent two great travellers, the Tobacco plant and Maize, to grow in future side by side in many countries of the Old World; while the eastern hemisphere conferred on the west its Apples, Pears, and Peaches, with its Bread-fruit and bread corns—Wheat, Rice, and Millett. The Mango came later still to the far West, and the delicious "No. 11," and the "No. 132," so justly prized in Jamaica, retain as their names the numbers with which the specimens were labelled in the collection captured in a French Indian man by Rodney, and taken by him into Kingston Harbour. America had few indigenous fruits adapted to our gardens. But let us be grateful for the Pine. Evelyn, who "first taught gardening to speak proper English," was present at the Banqueting House at Whitehall when his Majesty's gardener, on bended knee, presented Charles II. with the famous Queen Pine from Barbadoes, and as Pines and forced fruits soon began to be grown for sale by the London gardeners, we may conclude that English gardens henceforth supplied English tables without foreign help. Evelyn describes his brother's house at Watton as among the most magnificent examples of ornament of wood and water, "till the late universal luxury of the whole nation since abounding in such expenses." Among the recent introductions which were planted at Watton, when Evelyn himself inherited it, were Cedars, Larches, Silver or Spanish Firs, and Walnuts. "Sylva" was published in 1664; and, as hospitable hearths and timbered houses had made inroads on the forests, planting for utility soon became popular. "Sylva" recommended indigenous trees for profit; nevertheless, new trees and shrubs continued to arrive. Tradescant, a Dutchman, and one of Charles the Second's gardeners, travelled over Europe to collect plants, and visited Barbary, Greece, Egypt, &c., and his son went to Virginia on a similar errand. Among the new trees that the good bishop, Dr. Compton, was able to plant in his garden at Fulham, were the Tulip tree, Magnolia, deciduous Cypress (Swamp Cedar), Western Plane, and some other North Americans, and the Cedar of Lebanon in 1683.

Early Botanic Gardens.

Among the public and private botanic gardens which became rich in plants by the end of the seventeenth century, were the Chelsea Botanic Garden, presented afterwards, by Sir Hans Sloane, to the Company of Apothecaries, and claiming two Cedars of Lebanon, planted in the first year of their introduction; Ray's garden in Essex, Dr. Sherard's at Eltham. Dr. Uvedale's at Enfield, and that of the Duchess of Beaufort at Badminton. Before mentioning the exotic Oaks which, with a single exception, arrived at one or other of these gardens after Sylva Evelyn's time, we must refer to the two British species, *Quercus pedunculata*, or the common Oak, and *Q. sessiliflora*, the sessile fruited Oak, the grandest of a noble family in form and bulk, the longest lived, and the strongest timbered. The American cousins of our Oaks are more distinguished for their foliage and its rich autumnal tints, than for the durability of their timber; and their proper place is in the pleasure garden rather than in the wood. Three characteristic Oaks from the Mediterranean—the cradle of our exotic trees—are the *Quercus cerris*, the Turkey or mossy-cupped Oak, with its deeply-lobed leaves and fine tufted foliage; *Q. ilex*, the evergreen or Holm Oak, which has ornamented English shrubberies since Queen Elizabeth came to the throne, and has left its mark in King James's Authorised version of the Bible, A.D. 1611 (Susanna, 58); and *Q. suber*, the Cork tree, another evergreen species which grows in Kensington Gardens, and many other places, and needs no label, being sufficiently marked by its wrapper, or rind, of cork. Besides our long

list of foreign acquisitions, numerous hybrids have appeared, subsequently, on the scene of English gardening and arboriculture; the sub-evergreens known as the Fulham Oak and the Lucombe or Exeter Oak having been among the first offspring of our naturalised trees. The first is a round-headed; the second a pyramidal rough-barked tree, rapid of growth, like the Turkey Oak, and bearing a general resemblance to it and to its other parent, the Cork tree.

Early Tree Planters.

In the eighteenth century the number of patrons and planters of trees greatly increased. The Duke of Argyle stocked his garden at Whifton, and received, according to *Macmillan's Magazine*, from Horace Walpole the honourable sobriquet of "treemonger." At the same period, the first great planter of another ducal house began to clothe the hill and mountain tops at Blair Athol and Dunkeld with a timber tree which Pliny had admired for its durable and incombustible nature, and which was used for the Forum of Augustus, and for many of the buildings and bridges of Rome. The Larch had been introduced into England a hundred years before it arrived at Dunkeld with some Orange trees in 1727; but it had not been planted as a timber tree till it found its way from the hothouse to far colder situations on the Duke of Athol's estate, covering at length more than 10,000 acres, and yielding an immense revenue.

MORRIS'S CHARTOMETER.

WE have in a former number (see p. 382) alluded to this convenient little instrument; and, after having tested its accuracy in several ways, we have to confirm our previously-expressed opinion, that it



Morris's Chartometer.

will prove exceedingly useful in measuring distances from place to place on maps, by circuitous roads or rivers. With all such maps as have been laid down to regular scales—such as one inch, half an inch a quarter of an inch, or an eighth of an inch to a mile—the instrument, with its present set of moveable paper dials, is all that can be desired; and we should recommend Mr. Morris to give a few additional dials to suit maps in which a fractional portion of an inch to a mile has been adopted; such, for instance, as the atlases of the Society for the Diffusion of Useful Knowledge, and others that might be named.

H. N. H.

Green Food for the Polar Expedition.—Mr. Maw, of Broseley gives in a contemporary a useful hint for arctic voyagers. A few hundredweight of Mustard and Cress seed would afford (he says) the means of providing the Polar Expedition with an unfailing crop of green salad. Green Mustard, an effective anti-scorbutic, could be raised on board ship without a particle of soil by thinly sprinkling the seed on a piece of wet flannel or on the surface of a layer of moist ashes.

THE KITCHEN GARDEN.

DREER'S IMPROVED LIMA BEAN.

LIMA BEANS are a rather troublesome vegetable to prepare for the table, on account of the difficulty of shelling them; their pods do not open so readily as those of other varieties, and the operation requires strength of thumb nails as well as patience. In the ordinary Lima there is a great waste of pod; the Beans are set wide apart, and the pod is often so constricted that the halves touch between the Beans. A large pod will frequently have but two, or at most, three Beans, but this can be improved by selecting for seed only those pods which have four (or more if possible) Beans in them. The Lima is a distinct species (*Phaseolus lunatus*) from the common bush and pole Beans (*P. vulgaris*), and shows very little disposition to depart from its natural condition, or, as the gardeners phrase it, it will not "break" readily into varieties. Some years ago one of our western friends made many experiments, with a view to producing a low-growing or bush Lima, but when we last heard, he had not succeeded in overcoming the disposition to go to the top of a tall pole. A few years ago Mr. Henry A. Dreer showed us some Limas which he considered a great improvement upon the ordinary kind, and this year we received from his son a basketful of the same Beans for trial. We learned that this variety is the result of a careful selection carried on for some twenty years. In these Beans the pods are not only full, with no spaces between, but are as full as they can stick, the seeds so crowding one another that the ends of the central Beans are square; the Bean is also much thicker than the ordinary kinds. A vine of this description bearing the same number of pods as one of the ordinary sort, would, we should judge, yield nearly, if not twice, as much in shelled Beans. It is stated that this variety is much more productive than the common species, yielding as it does many more pods to the pole. The pod being so completely filled, the shelling becomes an easy matter, and the Beans when cooked are much superior to the ordinary ones, as the amount of skin is much smaller in proportion to the enclosed nutriment. We regard the improving of this Bean as one of the most important of the recent contributions to horticulture. We take quite as much, if not more, interest in a new variety, or the improvement of an old variety, of garden vegetables, as we do in those among fruits and flowers. And he who makes three Lima Beans grow where there were only two before, is entitled to quite as much credit as one who produces a Coleus with a new stripe in its leaf, or a Strawberry a trifle larger than any other, and horticultural societies should offer equally large premiums for improvements in the one class as in the others. [The above, from the *American Agriculturist*, reminds us of a delicately-flavoured and distinct species of edible Bean, which we have never seen in this country. It may not be possible to cultivate it successfully in the open air, but in large forcing gardens there are opportunities for testing its merits. The treatment usually given to Tomatoes in this country might be tried.]

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Keeping Celery in Cold Countries.—A correspondent of the *German Town Telegraph* says:—"A friend of mine has kept his Celery through the winter now for several years by setting it in spring water about an inch in depth; and, kept thus, it continues to grow and send up fresh leaves, so that he has cut nicely blanched tender tops two or three times in a winter. My trouble with the trench system has been meadow mice, which appear to be quite as fond of the plant as I am, and make sad havoc with it. Otherwise, it was the best way to keep it which I had an opportunity of trying."

Forcing Vegetable Marrows.—I will be almost completely run out of vegetables by the end of April, and as my employers are very fond of Vegetable Marrows, do you think I could have some fit for table by the beginning of May? I have some good brick-built Melon pits of the ordinary size, and plenty of fermenting material at command, both stable dung and Oak leaves, but no other heat. Under such circumstances, can I force Vegetable Marrows to come in by the time mentioned, or what other vegetable might I have fit for table at that season? Asparagus will not grow in our gardens under any circumstances, though I do not know why. The roots seem to rot away the second or third year after planting, leaving no trace of them behind. Perhaps some of your correspondents will kindly assist me in this matter.—T. S., *Limerick*.

Great Yield of Rhubarb.—A market gardener, near Providence, sold in that market last spring and summer nine tons of Myatt's Linneus Rhubarb from a quarter of an acre of land. Owing to very sharp competition he only received £5 a ton for it, or about a half-penny per pound. This is £45 worth of produce from a quarter of an acre, or £180 per acre. If it had not been for competition, and the Rhubarb had been sold at former season's prices, he would have received at the rate of £360 an acre for this crop. This, the *Agriculturist* says, is by no means an unparalleled return for such crops. It is a result of a very liberal use of manure and labour, and of adapting crops to the wants of the market. A farmer uses £10 worth of manure and thinks he is very extravagant. A market gardener uses £40 worth on rich land, and regrets that he had not put on more.

BIRDS FREQUENTING THE BOTANICAL GARDENS, REGENT'S PARK.

As reference has lately been made to the various kinds of birds which are to be met with in, or close to, London, I think it may prove interesting to some of your readers to be furnished with the result of my own personal observations of the birds which have been seen in the grounds of the Botanical Gardens, Regent's Park. I have had the pleasure, from time to time, during the last few years, of sending you accounts of particular birds which I have seen there; but I have not hitherto furnished you with a complete list of the species met with. The following may be relied on:

House Sparrow	Rook	Chiff-chaff
Tree Sparrow	Jackdaw	Willow Wren
Hedge Sparrow	Greenfinch	Golden Warbler
Robin	Yellowhammer	Reed Warbler
Chaffinch	Linnet	Blackcap
Larger Tit	Goldfinch	Whitethroat
Long-tailed Tit	Lark	Nightingale
Cole Tit	Pipit	Fly-catcher
Blue Tit	Wagtail	Cuckoo
Song Thrush	Kingfisher	Fieldfare
Mistletoe Thrush	Redpoll	Redwing
Blackbird	Siskin	Moorhen.
Starling	Tree Creeper	

From this list it will be seen what a great variety of birds congregate in one small place not far from the centre of this metropolis. I am certain I might add to their number; but, as the value of such observations depends upon their exactness, I have taken nothing for granted unless it agrees with my own individual testimony. For instance, I was informed, on most excellent authority, that a brace of partridges were seen there in the last spring; I have been informed, also, that a bullfinch was captured there some time ago. However, I did not see either of these birds although I fully believe in their having been seen there. I have also seen two or three birds which I could not make out to my satisfaction, and, therefore, do not include them in my list. It will be seen that not only does the list include those birds which are most familiar to us, and usually take up their abode with us, but a considerable number of migratory birds which traverse large tracts of land and sea, and, without doubt, repeat their visits to the identical spots where they had taken up their abode before, and where they have reared their young. The non-migratory birds are very numerous, and I am sure they have increased much since the Bird Act was passed. Their increase would be greater if we could manage to secure the nests in the early spring against boys and cats. I dare say it will be a matter of astonishment to some to find such birds as the linnet, redpoll, goldfinch, and siskin—the last three are rare visitors—but I have often seen linnets, and two summers ago a pair nested there. I noticed them in a particular part of the garden for some time, and felt sure there was a nest, but could not discover it. In due course my suspicions were verified in seeing a family of six birds flying about; and, when autumn came and stripped the shrubs of their leaves, I found the nest at the very spot where I suspected the birds would build it. Of the migratory birds, the willow warbler is most frequently seen; next perhaps the reed warbler, whose curious chattering most surely betokens the situation of its nest, which in these gardens is generally built in a Lilac tree. I have seen as many as five or six of these nests here in one summer. We generally get two or three pairs of blackcaps; I have, however, only on two occasions met with a nest of these birds. The chiff-chaff always visits us, but not in numbers. I noticed one curious circumstance in reference to this bird which is worth relating. In March, 1872, I heard this bird one fine morning; two or three days afterwards heavy snow fell, and the morning after the fall, whilst it was still cold, I saw a chiff-chaff flying about in the conservatory. It remained there for a week, enlivening the place with its merry notes and doing an immense deal of service by devouring the insects which infest the plants. In about a week the weather became milder, and the little fellow took his departure from the place where he was so warmly housed and so plentifully supplied with food. I have both heard and seen the nightingale every spring for the last five years, with the exception of the year 1872, and then I was told it had been heard, but I did not hear it myself. With regard to one bird which is mentioned in this list, viz., the long-tailed titmouse, I never expected to see it, nor have I seen one in the gardens until this autumn, when, curiously enough, I saw a flock of nearly a dozen flying together rapidly from tree to tree; they were evidently *in transitu*. When I was a boy at Harrow, nearly forty years ago, I often used to come across their beautiful nests; but I believe this bird is comparatively rare near London now.—HENRY SMITH, 82, Wimpole Street, in Field. [There are two or three other birds which we should have expected to see mentioned as observed from time to time in the Botanical Gardens, such as the swallow and martin, and the tiny golden-crested wren,

which often visits London gardens in winter, in company with titmice of different species. Perhaps our correspondent has accidentally overlooked these.]

THE PEZIZA CLASS OF FUNGI.

THE *Pezizas* form an immense class. Fully 100 have been described as natives of our island, some few being said to be esculent. Their form, in general, is cup-shaped, the cup, in some instances, being beautifully coloured, and holding the germs of reproduction, which are thrown off like a thin wreath of vapour when the sun is shining warmly on the Fungus. Indeed, the *Peziza* cups are, as a whole, very sensitive to light, and often remain closed and spœnia-like when growing in caves or dark recesses. Various, indeed, are their places of growth; some are seen on fallen branches, some on dead leaves, some on the ground among the grassy turf, and some, again, are denizens of the hot-bed. I shall describe a few of the more conspicuous that occur with us around the Lodge:—*Peziza coccinea*, a true winter beauty, is abundant with us on mossy banks among Hazels. It seems, indeed, to select Hazel-sticks as its favourite place of growth. Nothing can surpass the rich vermilion of this fairy cup; and when the stick on which it grows, and which is hidden from sight, is covered over with the dark green *Hypnum* Moss, it looks like a flower rather than a Fungus. These cups may be kept for a long time in beauty by simply unearthing the sticks on which they have fixed themselves, and occasionally moistening them with rain-water. Another species, almost as beautiful in colour, but not so symmetrical in form, is the *Peziza rutilans*, that grows among the sward of upland pastures. I met with it in plenty in October, on the Ormes Head, Llandudno, growing among the turf of the carboniferous limestone of the headland. This species throws off large jets of sporida in the sunshine. Its colour is orange-red; and it surpasses the *Peziza coccinea* in size of cup, though it is apt to be distorted in growth. *Peziza vesiculosa* has its home on old dunghills, and attains to a large size. The exterior of the cup, which is pale amber, is marked with pustules which are imbedded in scurf; hence the name. It is difficult to obtain a perfect cup, as the gregarious nature of this *Peziza* materially interferes with the regularity of the cups. I am always pleased to see a pretty little brown *Peziza* cup in the early spring, as it tells of coming flowers again. It rises among the turf from a black tuber some 2 or 3 inches below the surface, and hence it is called *P. tuberosa*. The cup is of a rich brown, and beautiful in form. The Shell *Peziza* (*Peziza cochleata*) also appears in the spring. It is of a dark amber, sessile, and caspitose. I find it under hedge-banks in grassy places, where it attains to goodly proportions. The last I shall mention is the Orange *Peziza* (*P. aurantia*), growing chiefly on the ground in woods. The cup is large, and bright orange externally, frosted with sparkling granules. I have met with it under Fir trees.

PETER INCHEBALD.

Horsingham Lodge, York.

A Hint for intending Emigrants.—According to the report of Gen. Brisson, sent to Western Nebraska by Gen. Ord to ascertain the true state of things among the settlers there, the inhabitants of eight counties in Western Nebraska "have literally nothing in the shape of fuel, clothing, or food to carry them through the coming winter." He found the people without meat, living on Pumpkins, Squashes, and black shrivelled corn bread, and, when he left, not an average of ten days' supplies remained. "One-third of the people are in a state of almost nakedness." The same authority says, "Ten thousand people in this State will need aid sufficient to keep them from starvation and being frozen to death this winter. Hundreds of people are naked and on the verge of starvation, and without means to leave the State."

Preserving Wooden Labels.—After the wooden labels are made, soak them in a strong solution of sulphate of iron. Let them dry, and then place them in lime-water, giving time for the lime-water to permeate the wood thoroughly. Insoluble sulphate of lime will be formed throughout the pores of the wood, which will prevent the absorption of water and consequent rotting. Twine used for tying up plants may be similarly preserved.

OBITUARY.

WE have to announce, with regret, the death of Mr. Daniel Nash, the head of the old-established house of Minier, Nash, & Nash, seedsmen in the Strand. The event happened last Saturday, after a brief illness. Mr. Nash had been ailing for some time; but it was only last week that serious symptoms set in. He may be said to have been the father of the London seed trade, and has for nearly half a century occupied a position in which he was held in the highest respect.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

DECEMBER 2ND.

THIS, the last floral meeting this season, was not so well supported as usual, it being too cold to bring out Orchids or even delicate stove plants. It was announced, as a new feature for the forthcoming season, that popular and scientific evening meetings would be held during the months of January, February, and March, to which fellows and their friends will be admitted. Prof. Dyer stated, in reference to the Royal Agricultural Society's attempts to check the Potato disease, that none of the reputed disease-proof varieties were found to resist that malady better than ordinary kinds. He exhibited wax models of *Stephanotis* fruit, and remarked that the sweet-scented tubular flowers of this favourite *Asclepiad* were perfect traps for insects whose presence was necessary to secure fertilisation in the absence of manual manipulation. Mr. E. G. Wrigley, of Broad Oaks, Bury, Lancashire, sent, through Messrs. Veitch & Sons, a new white-flowered crimson-blotched *Odontoglossum*, named *O. maxillare*. In habit it resembles *O. cordatum*, but the flowers are far more beautiful and distinct as regards colour. It bore a three-flowered spike, and well deserves general culture as a decided acquisition to an already beautiful genus. Mr. Brush sent six pots of a new double Neapolitan Violet, named *Lady Hume Campbell*. It has rather larger and deeper tinted flowers than the common form, and well deserves attention. Mr. Charles Green, of Reigate, sent a young plant of *Physianthus albus variegatus*, with oblong undulate yellow-margined foliage. In general appearance it resembles the variegated form of *Cobaea scandens*. Messrs. Standish & Co., of Ascot, contributed about a dozen dwarf plants of *Poinsettia pulcherrima*, with well-developed heads of vivid scarlet bracts. These varied in height from 15 to 18 inches, and when dwarf, as these were, are well adapted for all kinds of indoor decoration. Dwarf *Poinsettias* may be readily obtained by cutting the tops off tall and straggling plants just after the bloom buds are formed, and inserting them at once in a genial bottom-heated propagating case, in which they root nearly as readily as *Gardenias*. Mr. Smith, of Ealing Nurseries, sent six or seven dozen of well-grown profusely-flowered *Cyclamens*, among which we noticed some fine and distinct forms. The *Cyclamen* is now found to be one of the freest and most manageable of all winter-flowering plants, and its odorous flowers are unsurpassed for bouquets, button-holes, and, indeed, for all kinds of floral decorations. Messrs. E. G. Henderson & Son sent a beautiful and well-flowered group of perpetual-flowering or tree *Carnations*, the deliciously perfumed flowers of which are so useful at this season. The same exhibitors also sent a new *Dracæna* named *D. Duffii*. It is robust and compact in habit, having broad foliage, coloured as in *D. terminalis*. It promises to become a favourite with all lovers of fine-foliaged plants for exhibition. Messrs. Veitch & Sons sent specimens of their new self-protecting Broccoli, to which we alluded in favourable terms a week or two ago. Mr. E. Bennett, of Hatfield, sent two brace of Sutton's Improved Syon House Cucumber, in excellent condition. A fine collection of Celery was furnished by Mr. Barron, from the Society's garden, at Chiswick. Mr. Woodbridge, of Syon, brought a small dish of the plump richly-flavoured fruit of *Musa Champna*, which is said to be one of the finest of all the cultivated varieties. This being the last meeting of the year Dr. Smees' prizes of £5 each for the best dish of fruit and the best dish of vegetables staged before the Fruit Committee during the season, were awarded to Mr. Pearson, for his new seedling Grape, Golden Queen, and to Messrs. Vilmorin, of Paris, for their Seville long-pod Bean.

MANCHESTER GREAT FLOWER AND FRUIT SHOW

THE hall in which this show was held, in the Pomona Gardens, has an area of no less than 45,800 square feet, and is divided by pillars into what may be called a nave and four aisles, the length of which is 72 yards, while the breadth varies from 9 to 18 yards. It was fitted up for the exhibition with suitable stages, all of which were well-covered with plants and flowers, while in the centre were tables loaded with choice fruit. When we say that the schedule contained fifty-eight classes, that there were over 100 exhibitors, and more than 2,000 entries, it will be evident that the number of exhibits was great. These were backed up by the famous Pear growers of the Channel Islands. The Rev. T. C. Brehaut, of Guernsey, showed six Pears which were only a few ounces under 20 lb. Prominent among exhibitors of *Chrysanthemums* were Messrs. Grant, Copeland, Corfield, Lister, Norrie, and Rhodes; while among those who furnished miscellaneous collections of plants, we observed the names of Messrs. Liscombe, Pince & Co., Shuttleworth, Cole & Sons, Williams, Yates, Dickson & Co., and many others. The principal prizes for fruit were awarded to Messrs. Cypher, Turner, Wilkes, Hodgkins, Upjohn, Coleman, Roberts, Stevenson, Wildsmith, Jamieson, Fairbourn, Thomas, Ryland, Ross, Robinson, Gardener, and others. Some fine Hollies and Conifers (shown from the Exeter Nurseries) had a fine effect in the large hall, which was literally crowded with garden produce of every description. Silver medals for the most meritorious plants in the exhibition were awarded to Mr. Shuttleworth for *Gleichenia rupestris*, and to Messrs. Cole & Sons for *Cocos Weddelliana*, both fine specimens of their respective kinds. Of Roman Hyacinths some beautiful examples were shown by Mr. Collins, gardener to J. Todd, Esq.; pyramidal Cockscombs by Mr. Yates, and hanging baskets by Messrs. Dick Radclyffe & Co. *Cyclamens*, Orchids, Heaths, and other plants, together with bouquets and cut flowers, were abundant.

THE GARDEN.

"This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE NEGLECT OF PLANTING IN THE PARKS.

YEAR by year the fine old trees of Hyde Park and Kensington Gardens are getting sadly thinned. Some fall in the ripeness of age by the ravages of a sudden windstorm; some, having reached a period of natural decay, crumble, as it were, branch by branch, till the unsightly remnants of their trunks are no longer allowed to cumber the ground—removed as useless lumber; others, again, to suit some supposed improvement in the direction of a path or the opening of a vista, are ruthlessly cut down in their prime. These, and many other analogous causes, have reduced the number of full-grown trees to an unsatisfactory extent, and it becomes a serious question how these gaps are to be filled. A good deal of useful planting took place some forty years ago, and the trees then planted are beginning to do good service in replacing the fine old Elms of the parks which have disappeared. These new trees stand in groups of five, eight, or ten, in tolerably well-selected situations; and, in some cases, two or three members of these groups evince such robustness and capacity for rapid growth, that their inferior companions might advantageously be removed to give them a chance of becoming bi-centenarian giants, fit to replace those of their predecessors that have fallen or been destroyed. It is to be feared, however, that, with every advantage, the vicinity and approximation of smoke-vomiting chimneys will prevent their ever attaining to the noble dimensions of their ancestors. However, with careful treatment, such as watering during summer droughts, top dressing the roots with rotten manure during the winter, and judicious pruning, to strengthen the lateral branches and impart vigour to the main stem, much may be done, in spite of the smoke plague and other difficulties. The plantations of the Regent's Park have had some twenty years longer for the development of their growth than those in Hyde Park; and are, consequently, more advanced, and their greater distance from the heart of London has also been of advantage to them. The avenue of Horse Chestnuts and Elms in this park is, indeed, in a most thriving condition; and many of the trees, from their apparent robustness, are probably destined to make big wood, notwithstanding the encroachments of "brick and mortar," and other disadvantages. But, notwithstanding all the improvements of the last half century, much still remains to be done in order to make the cultivation of young trees counterbalance the decay or destruction of the old ones. It is necessary that a systematic course of planting should be annually in operation, both in late autumn and early spring. Economy may be pleaded as a reason for not pursuing a regular system of planting, but let it be borne in mind that thousands are now lavished every season on a display of bedding plants, the cost of which has to be renewed every year; while a fine young tree, if well selected and well planted, is an investment for a century. The bedding system, though attractive to many, has been somewhat overdone. Acres of green turf (which, after all, forms the most attractive feature of a park), have been displaced to make room for the display of masses of Geraniums and other bedding plants during their comparatively brief season of florescence, whilst the rest of the year their empty beds remain bare unsightly patches. Surely, then, it would be advisable to curtail the outlay yearly expended on bedding plants, and devote the surplus to the general improvement of the parks, and especially to the recovery, by systematic planting, of the losses incurred by the yearly perishing of old trees. In some respects, the gaps caused by time among the trees of the older London parks are scarcely to be regretted, inasmuch as a number of fine kinds have been introduced since the period during which the parks were originally planted, which are calculated to display much more variety and beauty of foliage than was at the command of planters a century ago. With a view to the extension of such judicious innovations, a certain section of Hyde Park

and Kensington Gardens should be carefully examined every year; and worthless trees and shrubs removed to make room for newer and better kinds. In this way, in the course of eight or ten years, the tree vegetation of the Park and gardens would be thoroughly renovated, and the plantations placed in a fair way to be bequeathed to our successors in a promising state. Pending such changes in our parks, there is Primrose Hill to begin upon. It is at present a treeless mound, like an inverted green wash-hand basin, and calls aloud for the landscape gardener to redeem it from absolute ugliness—a redemption easily achieved if the right means are adopted. We have only to turn to the Botanical Gardens in the Regent's Park to see what can be done with a far less extent of ground. Primrose Hill affords excellent opportunities for skilful planting; and, yet, this promising ground is allowed to remain fallow year after year. H.

TREE PEONIES.

(P. ARBOREA.)

THIS beautiful plant, although introduced long ago, is not yet very plentiful in English gardens. It is, however, abundant, even in small gardens, throughout the Netherlands, Belgium, France, and Germany. On this side of the Channel there have been, and are still, numbers of amateurs who make its culture a speciality, and who endeavour to raise from it new varieties; in fact, it is a plant which deserves to be more extensively cultivated than it is, especially now-a-days when we are doing away with band and ribbon systems of decoration, and are reverting to more natural modes of plant culture. The tree Peony is quite hardy, and, when properly planted, requires little more care. It is especially well suited for forming single specimens on lawns, and if, during the winter months, its appearance is against it, this drawback is amply compensated for in summer, when it becomes covered with fine foliage and gorgeous blossoms. When, too, it breaks into growth in spring, its young leaves assume every shade of colour, from violet-crimson to green. Until the second half of this century we knew but of such sorts as had white, rose, salmon, and lilac-coloured flowers; and we must acknowledge that we are greatly indebted to Mr. Fortune for the introduction of his Chinese varieties, most of which have scarlet, violet, and magenta-coloured flowers. Von Siebold, too, introduced a number of Japanese varieties, which, however, form a different race, and are mostly single or semi-double. Tree Peonies are not very particular as to soil or position; I have seen them in nearly pure sand, flourishing as well as in a strong loam. They, however, prefer a good strong soil, and where the soil is too sandy it should be made a little better suited for them by adding decomposed manure and loam; or, where it is too clayey it should be made lighter by means of the addition of manure, sand, and similar materials. Moutans are gross feeders, and amply repay for occasional top-dressings of half-decomposed cow-dung. Of the scarcer and best varieties nurserymen generally send out one or two-year old plants, grafted on the roots of *Pæonia edulis*. After a proper place has been selected in which to plant them, dig out a pit $1\frac{1}{2}$ feet deep and 2 feet in diameter; put in a few inches of half-decomposed cow-dung, and well mix it with the soil. The plants should be put in so that the graft may be buried a few inches under the ground, where it will, in time, throw out roots of its own. They do not flower well until the third year after planting, but, after that, they produce blossoms in profusion. Some of the more strikingly beautiful among them, such as Gloria Belgarum, Elizabeth, and Souvenir de Gand are well worth being put under glass—that is, they should have a sash or two put over them in spring to save them from late frosts and rainy weather. Of course plenty of air must be admitted, but, so treated, the flowers are gainers in an astonishing degree, both in size and colour. The parent plant of Gloria Belgarum was kept by its raiser, Mr. Goethals, at Ghent, in a house-yard, under a little glass-house, and when I saw it in 1854 it measured about 5 feet in diameter, and was bearing some forty flowers of a bright salmon-rose colour, each bloom measuring about 8 inches across. It was indeed a sight worth travelling miles to see.

MAX. LEICHTLIN.

NOTES OF THE WEEK.

— IN Mr. E. W. Cooke's garden at Glen Andred, in Sussex, the Tea plants, *Thea viridis* and *Bohea*, have stood out in a sheltered nook, without protection, six winters. *Thea Bohea* is said to be still in beautiful and abundant blossom.

— SOME fine Yams and Sweet Potatoes, have been brought into Covent Garden during the past few weeks. In appearance they resemble huge red Potatoes, and when roasted are said to be excellent in flavour.

— It has been resolved, on the recommendation of the Parks, Commons, and Open Spaces Committee, that additional planting and fencing be carried out on Stoke Newington Common, at an estimated cost of £100.

— CHRISTMAS decorations in the form of wreaths and other floral devices, already form a prominent feature in Covent Garden Market. In the construction of these berried Holly, silvery Immortelles, capsules of the Gladwin, and bleached Grasses are used with excellent effect.

— MANY of our readers who have seen the large *Luculia gratissima* growing in the cold conservatory at Thorpe Perrow, will be pleased to learn that it is now furnished with over 500 heads of bloom, in different stages of development—a grand object at this dull season of the year.

— DR. KING, superintendent of the Calcutta Botanic Gardens, states that the propagation of the *Ipecacuanha* plant by root and leaf cuttings has been so successful that there is at present in the Gardens a stock of 63,000 living plants; whereas four years ago there were but twelve cuttings, of which seven were afterwards accidentally destroyed.

— AT Nismes, in the South of France, the Japan Wax tree (*Rhus succedanea*) has lasted through six seasons, though it has been cut to the ground by frost more than once. The *Laurus camphora*, after giving hopes, has proved too tender. *Andropogon squarrosus*, an exceedingly fragrant Grass, has withstood the most severe seasons. All attempts to naturalise the *Eucalyptus globulus*, however, have, it is said, failed.

— THE annual festival of the Edinburgh Lodge of Free Gardeners took place the other evening in the Oddfellows' Hall. Mr. John Noble occupied the chair, after the reception of deputations from several sister lodges, addressed the meeting. It appeared from his remarks that the Edinburgh Lodge now possesses a capital of £3,000, and a membership of 300; and that its friendly society, which has been in existence for fifty years, is in a very prosperous state, having, during the period referred to, paid to its sick members £5,589 9s. 7d., and funeral money £2,195 10s.

— WE suspect there are so few who flower the beautiful *Orchis maculata* under cultivation, even in its ordinary season of blooming, that were we to ask "Have any of our readers tried to force it?" we should probably get ridiculed for our pains. Nevertheless, the *Farmer* says that the plant is amenable to such treatment, and that Messrs. James Cocker & Sons, of Aberdeen, force batches of it annually. This firm annually obtains fair sized samples of its tuberous roots from Holland, and pots them as soon as they arrive—generally about New Year's Day. When potted, they are put under the stage of a cool greenhouse, where they remain until growth commences—the subsequent treatment being in all respects the same as for *Hyacinths*—and they are said to grow and flower quite as freely.

— THE Shah of Persia appears to have been greatly struck with the beauty of European gardens. The entries in his diary, as he emerged from the vast and uninteresting plains of Russia to the more highly cultivated land of parts of Germany, are full of simply-expressed admiration for European horticulture. He says, enthusiastically, "Human improvements of charming aspect came into sight near and afar," remarking, with great admiration, the trees, flowers, and cultivated fields; and observing that the *Jasmine* of Sherwan, which Europeans call *Lilac*, was everywhere in luxuriant bloom. Over extensive districts, he exclaims, all was cultivation, avenues, forests, flowers, and meadows. The gardens at Potsdam appeared to him a world of delight. On reaching the Rhine he jots down still more vivid expressions of praise. The Rhine he declares to be a paradise, with its valleys and Vineyards. The extensive cultivation of the Vine and the Cherry tree appeared to him marvellous, especially the Cherry trees, which he found laden with fruit far more delicious than the Cherries of Persia. He thus describes the Vineyards of the Rhineland:—"Each Vine was bound to a strong stake; and the whole hill-sides and plain are one continuous Vineyard, from which the famous Rhein-wein is produced. The whole region is, indeed, a garden; mountains and plains are covered with

Vines, fruit trees, and flower gardens." But European horticulturists must not allow themselves to be too much elated by the praises of the Shah, as he appears to have been equally delighted and gratified with the astounding beauties of the wax-works at Madame Tussaud's.

— IN China a liquor is distilled from the flowers of the *Chrysanthemum* which is regarded as an elixir vitae, and in the Chinese pharmacopoeia a powder of the flowers is prescribed as a cure for drunkenness.

— A MR. RICKETTS, of Newburgh, New York, is stated to have raised a very remarkable set of seedling Grapes, of fine flavour and general qualities. They are the result of crossing the native American Grapes with some of the best European kinds.

— AT a late meeting of the scientific committee of the Royal Horticultural Society, Professor de Barry was disposed to believe that heterocism occurred in the case of the Potato parasite, that is to say, that part of its life was passed upon some other host besides the Potato. Mouillefert had recently suggested that this might be Clover, and Mr. Jenkins, secretary of the Royal Agricultural Society, supposed that both Clover and straw might harbour the unknown stage of *Peronospora infestans*, and that this "would justify the prevailing opinion that farm-yard manure encourages the ravages of the Potato disease, especially when applied in spring, because the spores of the fungus would be in the manure which had been used for litter."

— OF *Cymbidium giganteum*, a noble species well worth growing, we have just seen a fine specimen in flower in Messrs. Lucombe, Pince, & Co.'s nursery, Exeter, where it is bearing eleven fine flowers on a stout curved sub-erect or nodding spike. Its foliage is sheathed at the base around a short spindle-shaped pseudo-bulb. Each leaf is from 2 to 3 feet in length, and about an inch in breadth, of a deep green colour, and having about seven pale yellowish longitudinal veins. The individual flowers measure fully 3 inches across, the oblong sepals and petals being of a pale yellow colour, streaked or slightly tessellated with purplish-brown. The three-lobed lip is yellow, suffused with brown, and it has a two-lobed hairy crest running from the base to the apex. The column is vividly streaked with purple, and is terminated in front by a clear yellow anther case and appendages. When liberally treated, this is a beautiful species, which well deserves a place in collections.

— ALL who are interested in London gardens will learn with much pleasure that the Duke of Bedford has commissioned Mr. Meston to re-arrange and, in part, re-plant Bedford Square. The old specimen trees in our neglected London squares are by far the finest we have ever seen in any city, and the capabilities, so to speak, of these squares are, in other respects, so remarkable that a little good gardening and good taste are all that is required to make the old squares of London very beautiful. We trust that in the improvements of these squares, which this step of the Duke's may happily inaugurate, the designers will not spoil the quiet beauty of the shrubs and trees by the introduction of stonework, fountains, &c., by the display of which a garden is often greatly marred. There is, as yet, plenty of room for the display of the architect's skill on our houses, and public buildings, and, so far as squares are concerned, Nature and a good gardener are much to be preferred to cut stone and the architect, while the disadvantage, as regards economy, is all with the latter.

— THE Rev. George Henslow read a paper the other day on "Mechanical forces in plants" at a meeting of the West London scientific association. The paper was illustrated by diagrams and dried specimens. As regards rudimentary structure, he observed that although formerly the possession of the power of voluntary motion in plants was denied, it was so no longer. Animals and plants, he said, resembled one another in very many points, as, for instance, in the property of contracting on irritation. The contraction of the leaves of the sensitive plant, under an external stimulus, was almost identical with that of the tentacles of the Sea Anemone. The tendrils of the common Pea were observed to wave about almost as if by the power of volition, until they came in contact with a stick, when they clung to and wound round it. This power of contractibility evidently resided in the protoplasm, which had a common basis both in animals and plants. A plant it was said, sometimes exerted enormous force by the mere act of growth. With such force, indeed, did vegetable growth go on, that it was common to see stones and walls displaced by the process of root-growth. In the Rose of Jericho, and many other plants, including the delicate Mosses, they had also examples of hygro-metric force. The paper concluded with notices of the employment of levers of three kinds in connection with the fertilisation of plants by the aid of insects, in the cases of the Garden Sage, the *Arbutus*, and *Sainfoin*, and of a modification of the screw or inclined plane in the Scarlet Runner.

MY GARDEN IN AUTUMN.

I HOPE you will allow me to make some remarks on the glory of autumnal tints—a somewhat hackneyed subject perhaps—but it is impossible to look without admiration on the scene that lies before me. Rocks and dells, woods and groves, sunshine and shade, the mossy rock surfaces half clothed with varied vegetation, and presenting the utmost richness of colour. The continuous heat of the late abnormal summer, succeeded by almost daily rains, have kept the foot-stalks of the leaves constantly growing, so that the leaves of nearly every tree and shrub were retained till almost the middle of November, and presented a scene of marvellous beauty. Besides the russet and golden hues of the Oak, Beech, Birch, Chesnut, Ash, and Larch &c., which contrast so finely with the dark sombre masses of Yew, Holly, Portugal Laurel, Bay, Pine, and Fir, there are a vast number of lesser shrubs and trees whose leaves “die so sweetly,” and seem to “snatch a grace beyond the reach of art,” that I feel it almost a duty to name and describe some of them, and perhaps the most beautiful is *Smilax rotundifolia*, that paragon of ramblers; although the berries are seldom matured in this country, as they are in Rome, its leaves in late autumn are transcendently lovely, varying from the most vivid green to citron, and from golden-yellow to russet and rich brown. It is invaluable to climb over rocks and stubbs. No less lovely is *Liquidambar styraciflua*, including all tones of warm hues, besides deep green and purple. Scarlet Oaks and crimson-leaved claret Vines should have the sun's rays transmitted through them, as also *Acer japonicum polymorphum*, one of the many valuable shrubs introduced from Japan by the late John Gould Veitch, and his *Ampelopsis tricuspidata*, both culminating in the richest crimson and purple foliage. Among the many plants which pass off into yellow—Tulip-tree, Dogwood, Euphorbia, Magnolia, *Ledum conspicuum*, and the large *Polygonum* (glorious as a background) are the most prominent. Next the golden amber tones of the Maples, *Rhus Cotinus*, *Aralia japonica*, Chestnut, Beech, Horse Chestnut, and Birch. These are followed by the fine crimson of the old Virginian Creeper, different kinds of *Rhus*, *Photinia*, and others; also by several of the Barberry tribe, Guelder Rose, Cornus, Azaleas, &c., then the constantly changing tones of Brake, Strawberry, and Bramble; and nothing can be more beautiful in general effect than the latter. Contrasting with the above are the glaucous grey and silver of Eucalyptus, of many of the Junipers, of the Lawson Cypress, Yuccas, Echeverias, and Aloes. Completing the picture, every nook and spare surface teems with Polypody, Bilberry, Cotoneaster, Hypericum, Heaths, Ivies, Ferns, Sedums, Saxifrages, rock and Alpine plants, while masses of Holly, Laurel, and Rhododendrons close the scene.

E. W. COOKE.

Glen Andred.

A POTATO CORRESPONDENCE.

THE following correspondence between Prof. Dyer, of the Royal Horticultural Society, and the Secretary of the Royal Agricultural Society, possesses some interest for horticultural readers:—The paragraph which appeared in last week's *Nature* is so far interesting that it amply confirms the expectations of those who have watched the well-meant efforts of the Royal Agricultural Society with respect to the Potato disease. I wish to advert to it for two reasons. In the first place, it is interesting to see the way in which a matter of this kind is regarded by so influential a body. Here is a disease annually effecting the destruction of a larger or smaller part of a chief item in the food of the community, which has already produced a famine in one of the three kingdoms, and any year may produce another, and which for the last thirty years has seriously occupied the attention of scientific men throughout Europe. It is not surprising that the Royal Agricultural Society should think the offer of a £100 prize for an essay in any way an adequate method of dealing with the subject? In the first instance, the time for sending in the essays was actually fixed, so as to prevent the competitors from even going over the life history of the Fungus during one season before competing. This was pointed out, and the time was prolonged. But though the competition was advertised abroad in the German papers, nothing of any importance was elicited beyond what was already well known. The society then determined to offer prizes for disease-proof Potatoes. The utter futility of this proceeding was clearly obvious to anyone in the least acquainted with the subject. But

it was done, and possibly if the “botanic referee” liked travelling about the three kingdoms, his time was not wasted. But the result is exactly what it was predicted it would be. Now, it seems to me that this spasmodic and ill-considered way of dealing with a serious subject contrasts, to an extent that it is impossible quite to regard with satisfaction, with the course that would be adopted in such a matter in other countries. It shows, at any rate, how little the methodical scientific method of investigation is understood by the majority of well-informed English people. And this brings me to my second point. The society, anxious not to be entirely foiled, offered a sum of money to a well-known investigator of the life history of Fungi, Prof. de Bary, of Strasburg, to induce him to study the Potato disease. Considering that De Bary had already written an admirable memoir on the *Peronospora*, there was a certain simplicity in supposing that the gift of a sum of money would elicit some additional information which his zeal as a scientific investigator had failed to do. If it does, however (and the history of the *Peronospora infestans* is not perfectly understood), it will be a clear gain; but when we are told that “Prof. de Bary has worked out the scientific questions that occur as to the origin of the disease,” and that “it is owing to a Fungus (*Peronospora infestans*) which attacks the leaves first, and after absorbing the nutriment of them, utilises the petiole, and thus reaches the tubes” (*sic*), it is necessary to point out that all this and a good deal more was ascertained by the Rev. M. J. Berkeley in this country, and by Montagne in France, and published by the former in a paper contributed to the first volume of the *Journal of the Horticultural Society* in 1846.

W. T. THISELTON DYER.

My attention has been drawn to a letter in *Nature*, vol. xi., p. 67, signed “W. T. Thiselton Dyer,” and headed “Royal Agricultural Society and the Potato Disease.” It appears that Prof. Dyer has founded the statements and criticisms in that letter upon a paragraph which appeared in the preceding number of *Nature*. Had he taken the trouble to read the official reports that have been published by the Society in the agricultural newspapers, the criticisms he might then have made would probably have had some value; and I must express my surprise that a man of scientific pursuits should have omitted to take that most necessary and most elementary course which I may term the verification of fundamental facts. This is the more remarkable as he criticises the Society's want of “methodical scientific method of investigation.” Prof. Dyer asks, “Is it not surprising that the Royal Agricultural Society should think the offer of a £100 prize for an essay in any way an adequate method of dealing with the subject?” Now, what does Prof. Dyer mean by this question? He seems to imply that the Royal Agricultural Society offered such a prize, and that therefore they thought it an adequate method of dealing with the subject. But the society did not offer such a prize, and have not considered whether such a method would or would not be adequate to deal with the subject. The truth is, that Lord Cathcart offered such a prize two years ago, and asked the Council of the Society to nominate the judges and otherwise to take charge of the competition. This they did, and for this alone are they responsible. Prof. Dyer proceeds: “The society then determined to offer prizes for the disease-proof Potatoes.” To this I must beg leave to reply that the society did not offer prizes for “disease-proof Potatoes,” but for Potatoes which should resist disease for three years in succession in twenty different districts of the United Kingdom. If the somewhat lengthy statement of the terms on which the prize was offered has been colloquially abbreviated into “disease-proof Potatoes,” that does not justify a scientific man in basing an argument upon it, especially in the columns of a scientific journal. Professor Dyer continues: “The utter futility of this proceeding was clearly obvious to anyone in the least acquainted with the subject.” Here again I must join issue with the Professor. This prize was offered because certain essayists asserted, and seedsmen advertised, that they possessed varieties of Potatoes which would resist disease. To put these statements to the test was in conformity with the society's ordinary practice, which is to endeavour to make its members acquainted with the actual agricultural value of various articles, whether they be seed-Potatoes, manures, implements, or other commodities. As the result has been to show that none of the Potatoes experimented upon can resist disease for even one year in our twenty stations, the members of the society now know what value to attach to the assertions of their proprietors, and the result is, therefore, not utterly futile. These experiments have also been utilised to ascertain the influence of soil, climate, and modes of management on the crop itself, and on the Potato disease; and the results of this inquiry are now being worked out. Professor Dyer goes on to say—“Now, it seems to me that this spasmodic and ill-considered way of dealing with a serious subject

contrasts, to an extent that it is impossible quite to regard with satisfaction, with the course that would be adopted in such a matter in other countries. It shows, at any rate, how little the methodical scientific method of investigation is understood by the majority of well-informed English people." I am content to ask Prof. Dyer to point out what is "spasmodic" and what is "ill-considered" in the action of the society, and how does he justify his assertion about "the methodical scientific method of investigation?" It must be remembered that the Royal Agricultural Society was not established for the advancement of science, and certainly not for the advancement of botany; but it was established for the promotion of agriculture, especially by the encouragement of the application of the discovered truths of science to the practice of agriculture, as is shown by its motto, "Practice with Science." The Royal Agricultural Society does, however, enlist the services of scientific men upon its regular staff, and in this and other ways seeks to direct their attention to agricultural problems upon which the light of science is still wanting. As Prof. Dyer has contrasted the society's "spasmodic and ill-considered way" with "the course that would be adopted in such a matter in other countries," I hope that he will inform me of the course that agricultural societies in other countries have adopted in reference to the Potato disease and other such matters, without receiving assistance from the government of the country. I now come to what Prof. Dyer calls his "second point." He states that the society, "anxious not to be entirely foiled, offered a sum of money to a well-known investigator of the life-history of Fungi, Professor de Bary, of Strasburg, to induce him to study the Potato disease. Considering that De Bary had already written an admirable memoir on the Peronospora, there was a certain simplicity in supposing that the gift of a sum of money would elicit some additional information, which his zeal as a scientific investigator had failed to do." So far as I understand the meaning of the phrase "anxious not to be entirely foiled," it implies some previous disappointment. Now, so far as this from having been the fact, that the first step taken by the council of the society was to direct me to write to Prof. de Bary and urge him to continue his researches into the life-history of *Peronospora infestans*, in view of the vast importance of the subject in its agricultural bearings. Therefore I cannot see how the term "anxious not to be entirely foiled" can be made applicable to it. The society at the same time volunteered to place a sum of money at his disposal towards defraying the expenses which he might find it necessary to incur, but I hope that my communication to Prof. de Bary was not conceived in the offensive spirit which Prof. Dyer seems to suggest. The principle involved has been adopted by the British Association as one of the best means of advancing science, and I consider it a very different matter from that "certain simplicity" which Prof. Dyer derides. This was not only the first, but it was the only step then taken by the society in reference to the scientific questions bearing upon the Potato disease; and its results up to this time are in no respect indicated by the grotesque statements which Prof. Dyer quotes.

H. M. JENKINS.

HORTICULTURE AT THE INTERNATIONAL EXHIBITION OF 1876.

THE Horticultural Hall is one of the five principal buildings which the United States Centennial Commission will erect for the accommodation of the International Exhibition of 1876, at Philadelphia. These structures—the industrial hall, or main exhibition building, the machinery hall, the horticultural hall, the agricultural hall, and the art gallery—will have an aggregate flooring of about 40 acres; but the industrial and machinery halls have been so designed that they can be enlarged to almost double the capacity originally allowed, should the demands for space require it. The horticultural hall has been designed by Mr. H. J. Schwarzmann, under the supervision of the National Horticultural Society. Its materials are glass and iron, its length 310 feet by 160 in width, giving an area of 1½ acres. The greater portion of this space is devoted to the grand conservatory, which is 227 feet by 77, and occupies the central portion of the building, there being between it and the outer walls on either side the warm and the cold houses, and at the ends, on the right and left of the entrances the dining-halls, offices, retiring-rooms, &c. In close proximity to the horticultural hall will be a number of subsidiary structures—a Victoria Regia house, domestic and tropical orchard houses, a Grapery, and other horticultural structures. The surrounding grounds, including a large tract, may be extended almost *ad libitum*, and will be arranged for out-door planting, which will constitute the larger portion of the horticultural display. It is proposed to plant, at least a year before the opening of the exhibition, the representative trees of all parts of this Continent. The visitor, it is intended, shall see side by side the full variety of the forest

products and fruits of the country, from the Firs of the extreme north to the Oranges and Bananas of Florida, and Grapes and other fruits of California. An impression will thus be produced of the fertility of the land, and of the vast range and diversity of its products, of which few persons have any conception; and the exhibition, according to the *American Agriculturist*, will be without a parallel for extent and completeness. In addition to the strict horticultural display, careful provision will be made in advance for trials of agricultural machinery. At the disposal of the Centennial Commission are 450 acres of land, within the limits of Fairmount Park; and a considerable portion of this, divided into lots of suitable size, will be put into crops, for the purpose of testing the mowers and reapers and other agricultural implements offered for competition. About a year ago a National Horticultural Society was organised for the express purpose of co-operating with the Centennial Commission, and its various committees are composed of some of our most active amateur and professional horticulturists. The matter is in good hands, and we may hope to see a fine exhibition in 1876.

FERN CASES.

FERNS are plants which give little trouble, yet they are seldom to be found in sitting-rooms. For those who do not possess a large Fernery there can be no more interesting or pleasing occupation than attending to and watching the growth of these plants in their miniature house. Wardian cases may be purchased at a small or large outlay, according to size or ornamentation, but plain cases are quite as suitable as those that are ornamental. Where there is room, I like to see rather a large-sized case, in which large Ferns can be accommodated, and also a few small suspended baskets. As regards cultivation, the first thing that demands attention is the drainage of the case, for, if that is defective, neither Ferns nor other plants can be cultivated successfully. In order to secure good drainage the case should be fitted with a false bottom, into which the water may drain through perforated zinc or iron, on which the rock-work and little banks for the Ferns should be placed. The false bottom being a kind of little tank or drawer, if I may so term it, should be perfectly water-tight, so as to protect the carpet, and should have a little tap fixed in one corner of it, by means of which the surplus water, drained from the Ferns, may be drawn off. To be able to give free ventilation to the plants every morning is another essential point, as a stagnant atmosphere is almost as injurious as stagnant water. Over the perforated tray of the case a good layer of broken crocks should be laid, and these should be covered with Cocoanut fibre, on which the rock-work should be set. The space in which it is intended to grow the Ferns should then be filled in, and I may say nothing is better for this purpose than peat, rotten turf, and sharp grit sand. In the parts of the case intended for the planting of rather strong-growing Ferns, a larger proportion of rotten turf should be mixed with the peat than in those intended for less robust varieties. The next thing to be considered is, what kind of Ferns to plant in the case. I should recommend some of the following:—*Acrophorus chærophyllus*, *A. hispidus*, *Adiantum cuneatum*, *Anemia adiantifolia*, *Asplenium striatum*, *bulbiferum*, *Pteris serrulata*, and all kinds of *Trichomanes* and *Selaginellas*. If the Fern case be large it might be advisable to have an arch reaching from end to end, over which could be trained two plants of creeping Fern (*Lygodium scandens*), one planted at each end. From the centre of the arch a tiny basket filled with *Selaginella Martensii variegata* might be suspended. In planting Ferns care should be taken to place the dark green varieties next the light; in fact, to produce light and shade, and not to plant them just as they come to hand.

Stands of Plants.

Another favourite style of indoor decoration is wire stands filled with pot plants; some have them so that the plants can be arranged in tiers one above the other; but I prefer a flat stand like a table, on which the plants can have plenty of Wood Moss packed round the pots. It is a good plan during summer to wash the Moss well with water, before placing it between the pots; but care must be taken to squeeze all the water which it contains out of it, otherwise it would be liable to drip; damping the Moss, however, tends greatly to keep the plants fresh during the hot summer months. *Dracænas*, and hardy Palms are well suited for this style of decoration, but they require to have their leaves sponged now and then. Once a week will be often enough to water plants set in Moss; the plants should be lifted out of the stand, well watered, and, as soon as drained, returned to their respective positions; flowering plants, when they can be obtained, may be intermixed with the Palms and other foliage plants with good effect. Stands such as these are well suited for the decoration of a vestibule.

A. HASSARD.

THE INDOOR GARDEN.

FORCING GLADIOLI.

Few plants are more beautiful than Gladioli forced into bloom early in spring, either as cut spikes for the drawing-room, or in pots for the conservatory. For such purposes it is, however, essential that the bulbs should have been thoroughly well grown and well ripened; as it is a waste of time to pot weakly ill-developed bulbs, and the forcing should be carried on gently, in order to secure strong spikes. The hybrids of *Ramosus* and *Cardinalis*, are the best for early forcing, inasmuch as they bloom naturally earlier than the *Gandavensis* section; but some of the latter may be potted for late successions. They may be potted anytime from October onwards, according as they are required to be in bloom, early or late, and may be covered with old tan or sawdust, in a cool place, and introduced into heat as required in succession. About three bulbs in a 32-sized pot, will make a nice potful, or very strong bulbs may be potted singly in 48-sized pots. The soil should be turfy loam, well broken up, with about a third of well-decayed leaf-mould, or old hot-bed manure, and a good sprinkling of charcoal dust or sand should be added; bury the bulbs about an inch deep, and give them a good watering to settle the soil. The best place in which to start them is a low pit filled full of leaves, such a pit as is commonly used at this season and onwards for starting early Strawberries. The pots should be plunged in the bed, and a few leaves should be scattered over their tops to keep the soil in an even state of moisture without having recourse to the watering-pot before active growth begins. As soon as the spikes appear, the pots should be removed to the forcing-house and placed near the glass to be afterwards hardened off for the conservatory or drawing-room. When the plants have done blooming they should be removed to a deep cool pit to finish their growth; and, after undergoing the usual ripening process, they should be planted out the following year and fresh bulbs selected for potting.

E. HOBDAV.

EPIGYNUM LEUCBOTRYS.

SEVERAL species belong to this genus all of which are well worth cultivating as ornamental greenhouse shrubs; but *E. leucobotrys* is undoubtedly the best at present in cultivation. It was brought into notice by Messrs. E. G. Henderson many years ago; but never seems to have become very popular—a singular fact when the beauty of its waxy black-

spotted opal berries, and the freedom with which they are produced, are taken into consideration. This plant is well figured in the *Botanical Magazine*, and also in Messrs. E. G. Henderson's "Illustrated Bouquet," from a specimen grown in the Wellington Road Nursery. Our attention has been recently directed to this pretty berry-bearing shrub, through a plant of it in fruit having been lately exhibited to the Floral Committee of the Royal Horticultural Society, by Mr. Parker, of Tooting. The root of this shrub is somewhat singular; it is thick and swollen like that of a Chinese Potato or Yam. Its stems and branches are terminated by tufts of bright glossy green leaves, and, from among these, drooping racemes of white, black-dotted, berries are produced as shown in our engraving.

Mr. Gumbleton informs us that it has proved quite hardy with him at Belgrove, in the south of Ireland, where it has withstood the last two winters unhurt. The blossoms, which are, individually, small, pale, and insignificant, resembling those of an *Arbutus* or *Andromeda*, are produced in abundance, usually from the centres of the whorls of leaves which terminate the young growths of the year, the intervening stems being invariably quite bare and leafless, which give the plant a somewhat peculiar aspect. A raceme of bloom, however, occasionally pushes out of the hard bare stem between the whorls of leaves, a circumstance which somewhat relieves the plant of its monotonous appearance. The blossoms are short lived, and set their fruit almost immediately, and in great abundance. The berries, however, take a considerable time to swell to their full size and attain the pure ivory whiteness which makes them resemble, when at maturity, a round bone or ivory stud, relieved and ornamented by a clearly-marked jet black central dot, surrounded, as shown in the engraving, by a ring and five smaller dots of the same contrasting colour, giving the fruit a most unique and ornamental appearance. The berries reach their full development about the commencement of the month of September, and

remain on the shrub nearly the whole of that month. This interesting plant has, as we have stated, been long ago distributed by Messrs. E. G. Henderson, but those to whom they supplied it do not seem to have succeeded with it; probably, from taking too much care of it. The plant is evidently as uncommon as it is beautiful, but we hope, now that it has again been brought into notice, to see it more generally grown than it hitherto has been. The different species of *Epigynum* are East Indian shrubs, thus named in consequence of the disc which surmounts the ovary. They constitute a genus of *Vacciniaceæ*, known by their five-parted flowers, and bell-shaped or cup-shaped corolla.

B.



Epigynum leucobotrys.

CULTURE OF THE CHRYSANTHEMUM.

It is now over a hundred years since the Chrysanthemum was first introduced to the gardens of this country, and but little progress appears to have been made in its improvement until within the last thirty years, when the late Mr. Salter took it in hand, and year after year produced varieties—improvements both in form and colour. Others have contributed both seedlings and sports—that is, a flower identical as to form and general habit with the plant from which it springs, but differing in colour, such as we see in many of the most popular sorts; as, for instance, the unapproachable variety for general purposes, Mrs. Rundle, a moderate-sized incurved white, from which was produced as a sport the equally fine yellow, George Glenny. Many other established favourites have similarly sported, such as the fine Bronze Jardin des Plantes, from the bright yellow kind of that name. Golden Beverley sported from Blush Beverley, and numbers of others owe their origin to the disposition in the Chrysanthemum to diverge more frequently than most plants, from the colour of flower which, as a seedling, it possessed. Although much improvement has been effected in the Chrysanthemum, still its cultivation has not extended nearly so far as might have been expected from the numbers of ways in which it can be used in decoration, its unlimited and easy propagation, freedom of growth, adaptability to any soil if sufficiently enriched, and an ability to grow and flourish where few other plants can be made to exist. It must not, however, be inferred from this, that the Chrysanthemum is indifferent to good treatment; on the contrary, that it likes it, is evident from the results that are seen when it meets with liberal culture, based upon attentive observations as to its natural habits and requirements. It is to the character which the plant has for being able to exist under neglect and bad usage that is to be attributed the indifferent condition in which it is so often seen, even where better things might be expected.

Propagation and after Treatment of Cuttings.

The propagation of the Chrysanthemum may be effected in various ways, but for general purposes cuttings are the most satisfactory, especially for pot culture. The time at which they should be struck should be determined by the time and purpose for which they are required. If for exhibition, or even home decoration, I prefer taking the cuttings off as soon as they can be obtained in December or January; they should, as far as possible, be taken from plants that have not been too much weakened by over-crowding. Get them about 3 or 4 inches in length, remembering that with these, as with most other plants, a good cutting will generally keep ahead of a weak one through the first stages of the plant's existence, and, in the case of things annually propagated in this way, the weakly ones rarely overtake the stronger. Insert them, two or three together, round the edge of 60-sized pots (first removing with a keen-edged knife about one-half the bottom leaves), in equal parts of sand and good loam; give them a liberal watering, and remember, from the day the cuttings are inserted until the plants have flowered and are done with, never to let them get dry. This is of the greatest importance in the cultivation of this flower, either in pots or the open ground. The cuttings should be placed under a bell-glass in a cool greenhouse or garden frame, where frost can be excluded. They will require the soil to be kept moist, and any leaves that decay must be removed. As soon as they have made roots they will commence growing, when the glass must be removed to give them full air. They should then be moved, singly or in pairs, into 3 or 4-inch pots, in good soil, well enriched with rotten dung and leaf mould, if such is at hand. Always use enough sand to keep the soil porous, as the quantity of water the plants in their after stages require necessitates plenty of drainage. Keep them near the light, and when they have grown a couple of inches pinch out the points, to induce them to break. As soon as they have filled their pots with roots, move them into others 2 or 3 inches larger, using as before good rich soil. If kept in a greenhouse or pit through the winter, by the beginning of April they should be removed to a cold frame, off which the lights can be taken on mild days. As their pots become filled with roots, attend well to them with water, and by the end of May remove them into their flowering pots, which may measure from 8 to 12 inches in diameter, using soil composed of three parts loam, one part rotten dung, and one part well-decomposed leaf mould, with enough sand to ensure the water passing freely through it; pot moderately firm. By this time they will again require stopping; plunge them at once in coal ashes. Many defer this plunging of the pots until the plants become larger; but the soil in a pot fully exposed to the open air, if not plunged, fluctuates in temperature day and night with that of the air, in a way not conducive to free growth. When they have broken after this second stopping they will consist of from six to eight shoots, which, as soon as long enough, should be tied out to neat

sticks placed just inside the pots, sloping considerably outwards so as to keep the plants open. See that they stand in a good light situation, so as not to become drawn up, as they inevitably will if too near trees or high walls; yet they must not be too much exposed, or strong winds will be liable to break them. To afford a succession, a portion, especially the latest flowering sorts, should be again stopped at the end of June; after this time they should be syringed every evening. This not only assists the growth of the plants, but is the best remedy against green fly. As the roots now begin to take full hold of the soil, commence to give them manure-water every other time they are watered. Some growers do not recommend this being given until the plants have shown bloom; but, by so deferring its use, neither so many nor such fine flowers or foliage will ever be secured. It is somewhat difficult to convey an idea of the strength they will bear. The finest I ever had were fed from a tank in which the drainings from the cowsheds were caught, unmixed with rain or any other water. This was given them diluted in the proportion of one gallon to two of water every other day for a time, and after they had set their flowers they received very little pure water, except the syringings overhead. It is the want of sufficient sustenance in the shape of this liquid feeding, and negligence in allowing them to get dry, that causes them to become naked at the bottom, a circumstance which destroys half their beauty. Keep them well tied out to the sticks, so that they may not get broken with the wind. As soon as the flowers are formed and large enough to handle, they should be thinned.

Thinning the Flowers and Subsequent Management.

We have so far been treating of plants for general use, such as home decoration, not for purposes of exhibition, and more particularly in respect to the cultivation of such varieties as are best adapted to the purpose, by their ability to perfect a large number of flowers without regard to extraordinary size; but, even if there is no intention of growing them for exhibition, all except the Daisy-like Pompons should have their flowers thinned. By this means they will not only become much larger individually, but will last on the plants much longer than they otherwise would. This I have proved often by observing the difference between such as were thinned and such as were left untouched. In addition to the shoots that are induced to break by the stopping already recommended, the plants will, just previous to setting their flowers, branch out considerably, forming three or four shoots on each that already exists, the flowers on all of these, in the case of the medium-sized varieties, should be reduced to two or three, and the great quantities of small side shoots that are formed (more or less according to the character of the particular variety), all the way up, with their small flowers, should be removed as they make their appearance, as well as all suckers from the collar of the plants. Now, whilst the flowers are swelling, and consequently taxing the energies of the plant to the utmost, is the time when they should be carefully supplied with water; in hot weather they will require it twice a day. Every fortnight, from the time when the pots have got full of roots, turn them round in the hole they occupy in their bed of ashes, so as to prevent the roots that come through the bottom laying hold outside. To still further prevent this, a good large hole may be made in the soil with a crowbar, considerably deeper than the bottom of the pot will reach. Do not leave the plants out so as to endanger their injury by frost; the end of September is as late as it is safe to trust them, even in the south. Where a slight framework exists, that will carry a canvas covering that can be thrown over them at night, they will be safe; but, although a hardy plant, their time of blooming is so late in the season that their flowers are endangered if subjected to too much frost. An early Vinery, where the leaves are nearly all off, and where they can have air on at all times, with a very small amount of heat in the pipes during wet damp weather, answers well for them; some may be placed on the south side of a wall, and if there is a north or retarding house, late varieties, such as were the last stopped, should be placed here for succession. Should mildew make its appearance upon the leaves after the plants are placed in the houses where they are to bloom, flowers of sulphur should be at once dusted upon the affected parts; but, to prevent this, it is better to use a little warmth occasionally, with top air on, so as to cause a little motion in the atmosphere. Whilst here, they must not be allowed to suffer want of water; but, as the flowers get nearly expanded they will not require manure-water, which would be objectionable in several ways.

Planting-out System and Layering.

Chrysanthemums can also be grown well by turning them out into a good bed of prepared soil at the end of April, instead of potting on in the spring, and then planting them sufficiently far asunder, in an open situation, so as to induce sturdy growth. Here they require stopping,

staking, and tying, just as if they were in pots. They must also equally have their wants supplied with water, both pure and manurial, as also their syringing overhead, which, if persisted in, is an almost certain preventive of aphides. Immediately after the blooms are fully set they should be taken up and potted, giving them a good soaking with water as soon as they are placed in the pots. They should then, if possible, be put for a few days in a north house, and kept close, with little air admitted, until they have begun to root, which will be in a week, during which time give them pure water enough to prevent the least flagging, or the leaves will suffer, after which gradually give them air, and in a fortnight they will bear full exposure, when the flowers must be thinned, and plenty of manure-water given. But this planting-out system of culture is best adapted for producing large flowers for cutting, where the plants, instead of being stopped to produce a bushy head, have been confined to two or three shoots, and where there exists a house in which they can be transplanted from the open air into a bed of rich soil prepared for the purpose, where they can be moved with their roots little mutilated, a circumstance that must take place when they have to be placed in a limited-sized pot; here they just require as many stakes and ties as will support them, and for this purpose they need thinning (especially if the object be to exhibit cut flowers), so as to concentrate all the powers of the plant in a few blooms—from two or three to a plant up to half-a-dozen, according to the natural capabilities of the variety to perfect a greater or less number. The larger the flowers produced by any sort, the fewer, as a rule, it is able to carry. Where the planting-out system is followed for pot culture, there is another and a better method of managing them in their later stages of growth. Instead of stopping the last time they should be encouraged to make as many shoots as possible on the top of the main stems; and, as soon as the flowers are formed, the principal stems should be bent down to the ground and layered just under the head of small flowering shoots; this should be done by pegging the shoots down with some sufficiently strong hooked sticks in little hills of sifted soil, made rich with rotten manure and leaf mould, with enough sand added, so that the roots, when formed, can be transferred to the pots without being much injured; these shoots must have the soil in which they are layered kept regularly watered. They will quickly root, during which time the flowers must be thinned, and, as soon as they have formed as many roots as will nearly fill the pots in which they are to be placed, the main shoot should be two-thirds severed and allowed to remain so for three or four days, then cut away from the stool and at once potted in rich soil, well watered, and placed in a house where they can be shaded and kept close for a few days; or they may be put near a wall and covered with canvas, supported on a temporary framework, for a week or ten days, until they have commenced to root freely, when they may be gradually exposed to the full air, but on no account must they be allowed to flag in the least or the leaves are certain to suffer. Feed them well with liquid manure until they have nearly opened their flowers. I have seen them transferred from where they were layered into the pots when the flowers showed considerable colour, and yet, with careful management, every bloom would open as fully as if they had never been moved. Where Chrysanthemums are grown up to a wall, as on the side of a cottage, and trained thereto, their treatment, so far as propagation goes, may be the same, or division of the roots may be resorted to, not using too large pieces. The principal thing to observe is to take them up every spring and remove the soil so far as their roots have extended, as they are such gross feeders that they completely exhaust everything within their reach; this must be replaced with good rich new soil, and instead of being, as is often the case, made higher than the surrounding ground, it should be an inch lower, so as to hold the large quantity of water they require, the regular supply of which must never be omitted if slightly plants and fine flowers are expected. Syringe them and train the shoots; and here some may be stopped a little later, for the protection afforded by the wall, and the opportunity it gives of a little covering on doubtful frosty nights, will enable the grower to cut many a fine bunch after they are destroyed in the open ground, in which case all the difference that there may be as to treatment is that they should not be so often stopped, in order that their blooming may be somewhat earlier, before there is much danger of frost, to still further ensure which the earliest flowering sorts should be grown.

Varieties for different purposes.

As decorative subjects for pot culture and furnishing cut flowers are the most general purposes for which Chrysanthemums are used, I propose, first, to notice such sorts as I have found best adapted for cultivating in that way. Amongst what are known as the large-flowered varieties those that produce blooms of medium size are by far the best suited to the requirements of ordinary growers, on account of their ability to perfect so many more flowers than such as produce the largest blooms, which are more fitting for the exhibition

stage, and which, if not thinned to a comparatively small number, have a loose ragged appearance, not filling up properly the centre of the flower.

Large Flowered Varieties.—*White*: Mrs. George Rundle, White Eve, White Venus, Mrs. Halliburton, Beverley, and White Christine.—*Blush*: Hermione, Isabella Bott, Her Majesty, Cassandra, Mrs. Huffington, and Aimée Ferrière.—*Yellow*: George Glenney, Guernsey Nugget, Annie Salter, Aureum multiflorum, Jardin des Plantes, and Cherub.—*Bronze*: Robert James, Cardinal Antonelli, Mr. Gladstone, Bronze Jardin des Plantes, Bronze Annie Salter, and Mr. Evans.—*Rose, Lilac, and Pink*: Lady Talfourd, Princess Louise of Hesse, Purpureum elegans, Pink Perfection, Jane Salter, and Countess of Dudley.—*Purple and Crimson*: Julie Lagravere, Lord Derby, Progne, Fingal, and Josiah Wedgewood.

Large Anemone-flowered Varieties.—Fleur de Marie, Lady Margaret, Prince of Anemones, Bijou, Princess Charlotte, Margaret of Norway, and Louis Bonamy.

Pompons.—Mademoiselle Marthe, Madame Montels, Brilliant, White Travenna, Hendersonii, Andromeda, Hélène, President Decaisne, Saint Michael, Rose Travenna, Mrs. Dix, Miranda, Calliope, Grace Darling, La Poudre, Salamon, Andromeda rosea, Saint Thais, and Astrea.—*Japanese*: Grandiflora, Erecta superba, Fair Maid of Guernsey, Cry Kang, Red Dragon, Brown Dragon, Aurantium, and The Daimio.

The above kinds are such as are most suitable for the general grower for ordinary purposes, yet amongst them are also many of the best varieties for exhibition specimens in pots, being distinct and varied in colour, and possessing the natural capability to carry and perfect a large number of flowers—the first essential in a Chrysanthemum for either home decoration or the exhibition stages, and a property which the varieties that produce the best show-cut flowers, with few exceptions, do not possess. Yet, to produce the best effect with these most useful of all autumn plants, even for home adornment, a few of the varieties that make the largest and most perfect individual blooms should be grown. For this purpose the plants should be only once stopped and not allowed to carry more than from four to six flowers each. So treated, when placed in a group for conservatory decoration, they will stand up considerably higher than the rest of the plants they are associated with, and the size and quality of the blooms will form a pleasing contrast to the smaller samples that surround them. The most beautiful variety in existence, alike for its noble size, perfect form, and pure white colour, is Empress of India. This sort, well grown in a 12-inch pot, and allowed to carry about three flowers, will surprise any one who has not seen Chrysanthemums similarly treated. The following are a few that may with advantage be used in this way:—Prince of Wales, dark purple; Mr. Brunlees, Indian red; Lady Slade, distinct pink; Princess Beatrice, rosy-pink; Hero of Stoke Newington, rosy-blush; Plenipo, silvery shaded purple, large and fine; Mr. Stowe, orange-amber, very fine; Queen of England, very large white; Baron Beust, reddish-chestnut; Venus, large pale lilac; John Salter, red, orange centre; Miss Maréchaux, white, with good substance of flower; Jardin des Plantes and Cherub, both yellow. Anyone commencing to grow Chrysanthemums for exhibition as cut flowers will not be far wrong with the following selection:—Countess of Derby, Empress of India, John Salter, Golden John Salter, Princess of Wales, Princess Beatrice, Jardin des Plantes, Isabella Bott, Mr. Gladstone, Lady Slade, Alfred Salter, Mrs. Heale, Mr. Brunlees, White Venus, Venus, Lady Talfourd, Mrs. Halliburton, Princess of Teck, Empress Eugénie, Rev. J. Dix, Mrs. Sharpe, Nonpareil, Antonelli, Thais, Golden Eagle, Gloria Mundi, Bronze Jardin des Plantes, Queen of Lilacs, Her Majesty, and Golden Nugget.

T. BAINES.

Araucaria excelsa speciosissima.—This is probably one of the prettiest kinds of the Norfolk Island Pine produced, and is a variety which is, above all, remarkable for its hardness as well as for its appearance, which reminds one a little of the *Araucaria Cunninghamii*; but it is of larger size. We have admired it many times at the establishment of M. Rougier-Chanvière, who, with considerable trouble, has collected a large number of the varieties of *Araucaria excelsa*, such as we have never before seen. The distinguishing characteristic of the variety of which we are now speaking is, independently of its appearance and hardness, the length of its leaves, which are very large and curved—in fact, curled up—and which reach a length of 4 centimètres, and then terminate in a sharp point. This curling up of the leaves gives to the boughs exactly the appearance of the *Araucaria Cunninghamii*, and appears to be an intermediate link between the two kinds. From whence comes this variety? We are unable to tell. All we can say is, that it is one of the most beautiful and ornamental of *Araucarias*, and that we have only seen it at M. Rougier-Chanvière's, where it may be obtained.—*Revue Horticole*.

PELARGONIUMS AT CHILWELL.

THE most interesting feature in connection with Mr. Pearson's nurseries at Chilwell, at present, is a long span-roofed house filled with fancy flowering Pelargoniums, which, as regards profusion and high colour of flowers, surpass anything of the kind I have ever seen, even at midsummer. They consist of what is known as the Chilwell "strain," having all been raised there. The trusses of many of them are nearly as large as the crown of a man's hat, and many of the individual blooms showed a considerable margin when placed under a half-crown piece. The plants, though not set very closely together, were wholly concealed beneath their load of bloom, and, when looked at from one end of the house to the other, although no green foliage stood out in bold relief, there was nothing approaching sameness. The colours were so artistically blended and brought out that I am sure the most capricious, as regards such matters, would have pronounced the display faultless. No such variety of colours could be found in any other class of plants, either in or out of doors, at this season of the year. White, pink, lilac, rose, rose-red, scarlet, light and dark crimson, salmon-red, rosy and purple-crimson, and magenta are only a few of the shades which might be enumerated. I am not very partial to the extensive use of Geraniums in the flower garden, as, in many places, they are too short lived to repay the trouble entailed in their culture; but such a display indoors as that at Chilwell would quite compensate anyone for any amount of trouble bestowed to produce it. Many of the new varieties, to be sent out next year, are superior to any previously distributed; but prominent among the whole was *Amaranth*, a kind which cannot fail to be a favourite. As a pink, I have seen nothing yet to equal it. In one group were ninety-nine varieties, all of Mr. Pearson's raising. I saw other things at Chilwell which greatly pleased me; but this Pelargonium show in the beginning of December I shall not soon forget. J. MUIR.

Plant Growing in Glazed Pots.—It is generally believed that plants succeed best in pots which are most porous. Mr. Thomson, of Drumlanrig, entertains, however, a different opinion. More than half the Orchids, stove plants, Ferns, and even hard-wooded plants grown there are in pots which are thickly glazed from top to bottom, and the growth of one and all is wonderfully fine. The fine foliage plants are, indeed, marvels of health and bright colour, and many of the Orchids are unequalled in the country. Mr. Thomson informed me that, as the other plants, which are in common clay pots, require shifting, he intends substituting glazed ones, so that very shortly there will be no other kind of pot in use about Drumlanrig but glazed ones. The latter never become green or dirty looking, and all they require in order to renew their original gloss, when soiled in any way, is a rub with a rough cloth.—J. M.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

New Dark Neapolitan Violet.—This variety has much larger flowers than the common Neapolitan Violet, and, as a bouquet Violet, it is greatly superior to it; it also grows and flowers more freely, and it possesses, moreover, a lovely rich dark violet colour, very different from that of the ordinary kind. It is, in short, a distinct and valuable Violet, which, when better known, cannot fail to be appreciated.—G. BACON, *The Gardens, High Grove, Pinner.*

Should unhealthy Camellias be planted out or re-potted?—I have just had put under my charge thirty Camellias, ranging from 4 to 6 feet in height and very unhealthy. I am thinking of planting them out at the back of a Peach-house, but, before doing so, I should like the opinion of some experienced Camellia grower on the matter. Firstly, should they be shaken out or planted with their bulbs entire? Secondly, what is the best season for planting them? Thirdly, what kind of soil should I use? Fourthly, would they be better re-potted than planted out?—ENQUIRER.

How to Propagate Ipomœa Horsfalliae.—Let those who have an old plant of this either in a pot or planted out, take as many of the tubers as can be spared from it, and cut them into 2 or 3 inch lengths; then cut from the plant some of the last year's growths for scions, each containing two eyes; now cut a piece out of the tuber and cut the scion so that it will exactly fit the incision; tie a piece of matting round it, put it in suitable pots, and place it anywhere in a stove or warm pit, and thus treated not one out of fifty will fail. Years ago I struck hundreds in this way; one named, I think, *mexicana*, I used principally for stocks; its tubers are more numerous, and not so large as those of *Horsfalliae*.—W. DODDS, *Gladstone Villa, Bishopston, Bristol.*

Roman Hyacinths at the Manchester Show.—Beautiful pans of these Lily of the Valley-like flowers were shown at Manchester the other day by Messrs. Dickson and Robinson, and by Messrs. Dickson, Brown, and Tait. The fifteen pans shown by the first-named exhibitors, were in every way excellent, and the first prize was justly awarded to them; seldom, indeed, have such masses of pure white flowers been seen in December. The pans were done round with imitation green Moss, which had a pleasing effect. I have had pans ornamented in the same way for the decoration of a front hall, but instead of using green Moss, I employed sprigs of green Holly, well covered with berries, which answered admirably. I have also used berry-bearing Aucubas, round Snowdrops, in the same way and with excellent effect.—W. HINDS, *Otterspool Gardens, Liverpool.*

THE KITCHEN GARDEN.

FORCING VEGETABLE MARROWS AND OTHER EARLY PRODUCE.

WITH reference to the question asked by your correspondent, "T. S.," Limerick (see p. 529), permit me to say that Vegetable Marrows may be forced in the way he mentions. The seeds may be sown early next month, as the days will then be rapidly lengthening. Soak them previously to sowing in warm water, about 85° or 90°, till they show signs of bursting, then plant three seeds in a 48-sized pot, filling as many pots as will be required with soil that has been standing some hours in a warm place, and watering when necessary with warm water. Have the pit in a condition to receive the plants when strong enough to put out; good hills of rather strong loam should be placed in the centre of each light, packed firmly together and made high enough to raise the plants near the glass; as the material in the pit will be sure to settle as the season advances. If light rich soil is used, too much growth will be the result, and very little fruit. The plants may be earthed up when necessary, and as much firmness should be given to the soil as possible, in order to ensure strong short-jointed growth and a fruitful habit. After May, when the nights are warm, the lights may be taken off and the plants allowed to over-run the walls of the pit, and produce fruit in all directions. They should be well supplied with water, and have liquid manure occasionally. I am assuming that your correspondent has a warm house or pit at work in which to raise his plants. Besides Vegetable Marrows, with a number of pits and plenty of fermenting materials, very many other vegetables may be forced to supply an anticipated scarcity next spring. Early Potatoes may be had in quantity; Peas of the Tom Thumb section may be sown in pots early next month, and the pots set on a bed of leaves near the glass, both of which will be early and productive. French Beans may also be treated almost in a similar manner, only they will bear a few more degrees of heat than Peas. Cauliflower plants of medium and late sowings may be helped on now in pots near the glass, where a little heat can be given till they are quite strong, when they may be planted about 1 foot apart in one of the pits; as the space is too valuable to give much room, any deficiency in this respect must be made up by abundant supplies of liquid manure. Early French Horn Carrots may be sown from this time onwards. The white strap-leaved Stone Turnip may be had very early, and of better quality than can be obtained outside. Lettuce, Radishes, and small salading may likewise be had in abundance when space under glass can be spared. Seakale, Rhubarb, and Mushrooms also may be successfully forced in pits such as those described. E. HOBDAV.

Potatoes and Rotation of Crops.—Gardeners seldom think, I suppose, of planting the same quarter with Potatoes two years in succession, or it may be seldom once in three or four years. Perhaps it is not generally known, however, that ground will bear cropping with the Potato longer, year after year in succession, than with any other plant, before getting "sick" as it is called. Still one would hardly imagine that a piece of ground scarcely a spade deep would bear crops of Potatoes, and fine crops too, year after year in succession, for nearly twenty years. Yet this, I believe, has been done, and not unfrequently. I am acquainted with one plot of ground, belonging to the superintendent of a national school, that has produced heavy crops of late Potatoes every year for ten years, to my knowledge, and it had been cropped in the same way for some years before I knew anything of it. This autumn I saw a fine crop of Paterson's Victoria taken off the piece as usual; and there seems no reason to believe that it will ever get "Potato sick" at any future time. The ground has never been trenched, and is not extravagantly manured—whatever manure is used, which is generally from the farm-yard, having to be paid for annually. "Facts are chieftains that winna ding;" and my friend the schoolmaster is inclined to be rather facetious when the rotation of crop theory is insisted upon in the face of his Potato crop, which is always equal to the best in the neighbourhood.—*The Gardener.*

Sulham Prize Celery.—Mr. Tegg, the gardener at Bearwood, who grows yearly a large quantity of Celery, only cultivates the Sulham Prize Pink, of which he exhibited at Reading the other day superb samples; not picked here and there, but taken from the row just as they come. He pronounces it to be the very best Celery he has ever grown.—D.

THE FLOWER GARDEN.

A WINTER FLOWERING HONEYSUCKLE.

(*LONICERA FRAGRANTISSIMA*.)

THIS is an extraordinarily sweet and useful Honeysuckle, well deserving the name *fragrantissima*. It flowers in the depth of winter—from December to February and March—a season during which it, of course, often encounters severe frosts. Instead of the flowers, however, being destroyed they continue to exhale so exquisite a fragrance that no garden should be without them. This shrub, unhurt by frost, will flourish in any soil or situation, and is, in short, one the cultivation of which we heartily recommend. It may be



The most fragrant of Honeysuckles.

raised from cuttings which generally strike well, whether in a green or ripe state. It is believed to be a native of China. A. B.

COLOURS OF FLOWERS AND INSECT FERTILISATION.

YOUR correspondent, "A. D." (p. 497) is, perhaps, not aware that plants, as regards their fertilisation, are divided into two classes, homomorphic or self-fertilising, and heteromorphic or cross-fertilised. All diclinous plants, those in which the sexes are divided, are necessarily in the latter class. These heteromorphic plants are sub-divided according to the way in which they are crossed, whether by means of wind, water (as in *Vallisneria*), birds, or insects. Some plants have two forms of flowers, one inconspicuous and self-fertilising, the other conspicuous and cross-fertilised. Following up Mr. Darwin's aphorism, "Nature abhors perpetual self-fertilisation," Prof. Hildebrand and others went too far in expecting universal crossing; yet the facts remain that, in many cases, crossing is absolutely necessary; in others it is facilitated by the structure of the flower and is beneficial to the production of seed; in others it is favoured by the prepotency of foreign pollen; and in a very few cases it is impossible. Wind-fertilised flowers have always an inconspicuous appearance, whilst those fertilised by insects are either scented or conspicuously coloured, but seldom both. Your correspondent seems to consider that we are only guessing, but the experiments of Mr. Darwin and the observations of Hermann Müller have established the above-mentioned principles on an incontrovertible basis of fact. No one denies the existence of self-fertilised forms, or the necessity of the intervention of insects in other cases, or the effectiveness of odour as an attraction to insects. The slight but distinct colour of the flowers of *Mignonette* would serve to direct insects previously attracted to the plant by its odour. I beg to submit that *Charlock* is as attractive; but, on the whole, not more common than the *Poppy*. Pollen certainly has no effect on distinct species; but, I think, insects do frequently confine their attention to a single species. The point at issue in the pages of *Nature* was not the necessity but the origin of brilliant colours. The Darwinian hypothesis is, that slight variations have been intensified by natural selection. The opposite view

is, that "beauty is an object in Nature." This expression I fail to comprehend, and can only say that it is no explanation. As Mr. Darwin says ("Origin of Species," chap. xv.), "it is so easy to hide our ignorance under such expressions as the 'plan of creation,' 'unity of design,' &c., and to think that we give an explanation when we only re-state a fact."

G. S. BOULGER.

8, Westbury Road, Harrow Road.

The Crimson Schizostylis (*S. coccinea*).—I beg to endorse all that your correspondent has said in praise of this plant; I, too, have a long row of it, which is, and has been, in fine condition for many weeks. I also grow it for greenhouse decoration in winter, and this year had it in flower till the latter part of February, with merely the protection of glass. My plan is, to divide the tufts in May, and plant them in rich and rather stiff soil in an open situation, watering them in dry weather. By the first week in September they make fine clumps, when I carefully lift them with a ball of earth, giving them plenty of pot room, and place them in a sunny situation until the approach of frost. They are then either moved to a frame or to a cold house, where they continue their bloom in long succession. It seems the more flowers are cut from it the more spikes the plant throws up. It is a plant for everybody, and all who possess a rod of flower garden should obtain it.—J. M., *Hawkchurch, near Axminster, Devon*.

Roses on their own Roots.—I do not see any reason why these should not become the rule, and budded ones the exception, as it is only exceptionally delicate sorts or those of a peculiar habit of growth that appear to be benefited by other roots than their own. In the case of standards every Rose grower sustains losses in the shape of heads blown off at the junction between stock and scion, and with Roses grown in that way there is always a difficulty in keeping down suckers, evils which would be avoided were they on their own roots. One or two good strong dwarf plants of each variety might be planted for stools, sufficiently far apart to admit of the shoots being layered all round; when rooted, these should be planted in nursery beds for a year. Those intended for potting or for dwarf beds should be cut down close to the ground in spring, and those intended for standards or pillars should be trained up to stakes. Roses on their own roots make equally good standards, and in as short time as budded ones, and no danger need be apprehended of their heads blowing off; besides, should they be killed to the ground by frost they will spring up again—a Rose instead of a Briar. The stems will not be so thick for the first few years as those of budded Roses, but they will increase in proportion to the growth of the head; and, as standards are usually supported by stakes, small stems form no drawbacks. We have some strong-growing varieties like *Charles Lawson*, *Charles Lefebvre*, &c., treated in this way that have surpassed in growth and general appearance Roses grown on the Briar.—J. GROOM, *Henham Hall, Suffolk*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Saxifraga longifolia as an edging.—This beautiful Saxifrage is grown by the thousand at Drumlairig; edgings of it hundreds of yards in length may be found in connection with ribbon and mixed borders in the kitchen garden, and it is equally useful for edgings to beds, whether they are filled with *Geraniums*, *Alpines*, or herbaceous plants. It may be increased by means of offsets, which should be carefully taken off in autumn, and planted and wintered in a cold frame.—J. MUIR.

How to Propagate *Diplopappus chrysophylla*.—In reply to Miss Hope's enquiry (see p. 497) as to the propagation of this plant, I may state, as the result of my experience, that when growing freely, and in about a half-ripened condition, the young shoots, taken off with a bit of beel, notched, as it were, out of the main stem, will strike freely, merely protected by a hand-glass, provided they receive the ordinary attention—a morning breath of fresh air for an hour or so. Bottom-heat, unless of the very mildest description, is ruinous to this plant; and stunted ill-conditioned plants will always result from using the hardwood such as is represented by the twiggy shoots covered with leaves.—J. C. NIXON, *Botanic Garden, Hull*.

True Creepers.—Your correspondent "T." (p. 517) has made a comparison between root-creepers and "root-climbers" (see Darwin on "Climbing Plants.") There are hundreds of hardy root-creepers, but the number of hardy root-climbers is limited. We can add, however, to his list *Bridgesia spicata*, *Rhus radicans*, and *Euonymus japonicus variegatus*. I should add, also, the *Ephedra* (*distachya* and *monostachya*) and *Lygodium scandens*, but I add them doubtfully, as I have not got them in my garden to refer to. I have seen a Strawberry creep up a wall without assistance, rooting as it went; and the *Linaria cymbalaria* is distinctly a climber, with the difference that it generally commences at the top of a wall, and climbs downwards, rooting as it goes.—H. N. ELLACOMBE, *Bitton Vicarage*.

Gravel Walks: J. T. B. The best material for surfacing is good yellow binding gravel, with the coarse stones removed. Burnt clay is more suitable for the substratum. The best walks we know of are those thus made in London gardens. When finished off with a sprinkling of sea shells (which soon become ground into small particles), as in the broad walk in the Botanic Gardens in the Regent's Park, and the broad walk in the Park itself, they surpass any walks we know of, and are almost as agreeable to the foot as a close carpet of turf.

THE FRUIT GARDEN.

THE GRAPE VINE.

Formation of the Vine Border.

THE Vine will thrive well in a very shallow soil, with ample supplies of water at the roots and frequent top dressings; but the results are more constant and enduring when the soil is deep. Besides, a uniform degree of heat and moisture at the roots is essential to the well-being of all plants, and to none more so than the Vine; and those conditions are better secured by a deep border than a shallow one, as, the greater the bulk of soil, the less liable is it to be influenced by external circumstances. Three feet of soil, on the average, is a suitable depth; which, with 9 in. of drainage, will make a total depth of 3 ft. 9 in. to the bottom of the border. A greater depth of border than this has been recommended, but to go beyond 4 ft. would, in my opinion, be only to incur additional expense to no purpose, and to render subsequent operations inconvenient. The width of the border must depend upon the size of the Vinery and the extent of training surface. For a house of the dimensions I have given in a former chapter, a border 25 ft. wide, including the inside portion, will be required eventually; for, though the inside border had better be completed at the beginning, it is not necessary to form the whole of the outside border at first, which may be completed by ekes added annually for the first two or three years after planting, as the roots are found to progress outwards. These additions give the Vines a fresh stimulus every year, and ensure a more even distribution of the roots throughout the border. When facilities for perfect drainage exist, the surface of the border need not be more than 1 ft. above the natural level of the ground at the front of the Vinery, and it may slope down to the ground line at its outer edge. The Vine is a grosser feeder and a greater drinker than many suppose, and more failures have probably resulted through borders being made too high than too low. Operations commence by first marking out the area of the border, and then removing the soil and sub-soil to the required depth, taking care that the bottom has an even slope to its outer edge when finished. When new Vineries are to be erected, this work is done when the foundations are taken out. At this stage, also, the bottom heat, if it is to be secured by aëration or hot-water pipes, must be seen to as directed in a former chapter. Here I am speaking as if no such means were employed.

Sub-soil Drainage.

In some situations the sub-soil is so dry, that its drainage is neither necessary nor desirable; in others, a single drain 3 feet deep, carried round the ends and along the front of the border, is sufficient; while, in cases where the sub-soil is wet, or the rainfall excessive, the drainage becomes a matter of the first importance. In the latter case, a drain 3 feet deep, having a good fall and a ready outlet, should be carried along the front of the border, and, into this, drains driven across the border from back to front, and 8 or 10 feet apart, should be led in such a manner as to prevent the possibility of water stagnating about the roots or in their vicinity. On the bottoms of the drains 3-inch tiles must be laid, and the drains filled up with broken stones to the top. After this, the concreting of the bottom must be considered. When the sub-soil is rocky, or of a hard and dry texture, concreting is unnecessary, for the roots of the Vine rarely penetrate such soils—at least, I have never found them to do so, even in the case of Vines planted fifty years or more; but they are pretty certain, sooner or later, to find their way into a soft spongy soil in quest of moisture, and concreting is then the only preventive. An easy and effectual enough way of doing this is to put a layer of rubble about 4 feet deep on the bottom of the border, in order to form a dry bottom; upon the top of this another layer of equal thickness, composed of smaller stones, broken bricks, or clinkers is laid; and over this, again, a layer of lime, or lime and sand, of sufficient consistency to cement the materials together and form a good crust, is spread, and the whole rolled or beaten and left to set. If this work is done well—and masons' labourers are the best hands at it—there will be no danger of the roots getting into the sub-soil. As soon as the concrete is hard enough to permit of further operations, 9 inches of drainage, consisting

of brickbats or stones, should be laid on it, keeping the largest stones on the bottom, and reserving the siftings for the top. Above all a layer of sods, grassy sides downwards, should be laid, to prevent the soil from being washed in amongst the drainage, and the border is ready for receiving the soil.

Soil for the Vine.

It has long been supposed that the Vine preferred a calcareous soil to all others, which has led to an extravagant use of lime in the formation of Vine borders; but more recent experience has shown that it will thrive quite as well, if not better, upon the red sandstone, and in deep and strong loams. All of which simply goes to prove that the Vine is cosmopolitan in this respect, and adapted by Nature to thrive under very different conditions as regards soil; hence its wide distribution. It has its proclivities, no doubt, and these should be studied when opportunity offers; but it should also be known, for the sake of that numerous class who have but small facilities in that way, that the Vine will thrive well in any soil that will produce fair crops of Peas and Potatoes, or other vegetables, provided it is as liberally treated as these generally are. Another prevailing notion is that the soil for a Vine border cannot be too open in texture, and to maintain the border in as porous a condition as possible has hitherto been the aim of many Grape growers; but this notion is fallacious—for, though a border composed of chopped turf is the best to begin with, as the Vines root into such material quickly and get a grasp of the border at once, it is not by any means necessary to keep up this spongy texture, for a hard soil seems as congenial to the Vine as any others. When a Vine is hard potted it invariably makes the most roots and a good cane, and it is the same in a hard border; the roots do not travel so far, but they are far more numerous—in fact, obstruction has exactly the same effect as root-pruning, which has been practised on young Vines with the very object of keeping the roots at home, as the phrase goes. I grow many pot Vines here every year, and have compared those which had their roots cut several times before being put into their fruiting pots, with plants grown in the usual way but firmly potted, and never found any difference either in the crops or the appearance of the roots afterwards. My opinion, founded upon observation and considerable experience, is that what is generally denominated a "strong loam," of a solid texture, is the best for sustaining the Vine in vigour and fertility for a long period; and from choice I would prefer the top spit of a heavy pasture land to any other for border making. From such a soil constant and heavy crops and large berries may be confidently expected, and the least shanking, if any. The soil here is of an unusually heavy character, and borders composed of turf originally soon settle into a solid mass; but Vines thrive long and well in it, as the following instances will show. Up till three years ago we had a house of Vines, Black Hamburgs, which had been growing in the same border for sixty or seventy years, and which, so far as I could learn, had always borne good crops of Grapes. The border, which was outside, and about 3 feet deep and 16 feet wide, was composed entirely of this heavy loam, apparently without any admixture, and had long ago become a hardened mass. About twelve years ago a new Vinery was built over the old Vines, it being considered preferable to keep them on to planting young ones. The new Vinery, being larger, permitted their further extension, which improved them considerably, and for the remainder of the time—eleven years—they were forced for a second early crop, and always bore fine fruit. When it became necessary to do away with these Vines in order to extend our late Vinery, I had the curiosity to examine the condition of the border and the state of the roots. After removing the soil—which had accumulated in the course of years to a depth of 15 inches or so, and which contained no roots at all—I came upon the original yellow loam of the border, and found it to be permeated in all directions with roots of the most healthy description, which explained the long-sustained vigour of the Vines; but I confess the soil, both in quality and texture, was not such as I had at one time regarded as favourable to the Vine, for it was stiff and tenacious, almost approaching to clay. We have another Vinery here—a ridge-and-furrow—50 feet long and 6 feet wide, with a restricted

training area, containing four Vines, which annually bear close upon 400 lb. weight of Grapes every year, and the berries (Hamburghs) are seldom under an inch in diameter on the average. These Vines are growing in an unprepared border, about $3\frac{1}{2}$ feet deep, of the same stiff loam; and, though the roots are all outside, and only protected in winter by a mulching, they are always to be found in a state of good health. A hard soil is the driest of all soils, according to my experience. These and other instances of the same kind have led me to prefer a strong loam to all others for the Vine; and if it is a sandy loam, so much the better. There is no doubt, however, that lasting results can be obtained from light loams as well, but they require more feeding and attention. The old Vines at Cole Orton Hall afford a remarkable example of successful culture in this respect. Mr. Henderson has had charge of the gardens there for thirty-five years, and it is well known that during that time he has been one of the foremost exhibitors at our great shows—his examples as a rule fairly representing the crops produced annually for his employer's table. Mr. Henderson disclaims being a sensational Grape-grower, rightly measuring success by its continuance, neither is he a believer in expensively formed Vine borders, having proved by long experience that the best results can be obtained by simple means intelligently applied. Information regarding the Vines and borders at Cole Orton will doubtless be acceptable and instructive, and, through the courtesy of Mr. Henderson, I am able to give it in his own words. He says: "The principal Vine borders here were made before I came to this place in 1838, and the Vines have been planted forty-three years. I do not attribute the excellence of the Grapes altogether to the materials of which the borders consist, but to the constant drawing of the Vine roots to the surface by means of manure put on the borders, about a foot thick, every year, thereby raising a gentle heat. Our soil is rather a light loam on the red sandstone formation, and the only Vine borders I have made here were made of this loam, with the addition of one-twelfth of good stable manure. No other materials were used, and the Vines planted in this have always been the best Grapes. The borders were only made 7 feet wide and 18 inches deep, and the Vines have been bearing for thirty-four years." Such is the simple story of one of the most successful Grape growers in this country. I am acquainted with another exactly parallel case. In a little Vinery belonging to a country clergyman with whom I am acquainted, crops of high excellence have been produced for twenty years. The minister is an enthusiast in Grape-growing, and attributes his success to that, and heavy waterings, mulchings, and liberal manuring. The border was originally composed principally of the garden soil, trenched over and manured. Mr. Coleman, of Eastnor Castle—who also produces excellent crops of Grapes from aged Vines—attributes his success to the use of a moderately heavy loam from the volcanic formation in his neighbourhood, which, he says, does not retain its fibre long, but nevertheless induces a profusion of healthy roots, such as the calcareous loam, which he has also tried, never does. Mr. Coleman was led to try this soil from observing that fruit and other trees grew well in it—not a bad way of guessing at the quality of the soil at any time. Gardeners have generally to choose soil from their own locality, and they will not err far if they always select the top spit from localities where the Oak, Ash, Lime, or Sycamore are observed to thrive well. The turf should be taken off the ground when it is moderately dry; and if it cannot be prepared and put into the border at once it should be stored in a dry shed, and there chopped up with the spade. If the soil is of an unusually heavy texture, one-third of decayed and rotted manure and river sand may be added to it to lighten it; and in all cases a considerable quantity of broken bones and bone-dust should be used, and in non-calcareous soils about the same quantity of lime scraps. The whole should then be turned over and mixed several times, and left till wanted. If the borders can be got in readiness for the reception of the soil a month or two before planting time, so much the better, as it gets time to settle, and there is less danger from fermentation, which often occurs with fresh turf. In cases where the means for forming Vine borders as here directed are not available, the site may be drained without removing the natural soil if it is an ordinary fair sample; and

after doing this, the ground should be trenched over 2 or 3 feet deep according to circumstances, adding at the same time a good sprinkling of broken bones and well-rotted cow-dung or stable manure, mixing the whole together as the trenching proceeds, and taking care at the same time to level the surface of the sub-soil in a regular way as each trench is turned over, and to ram it well with wooden rammers if it is of a soft texture, to prevent the roots from getting down into it.

(To be continued.)

J. S.

AMERICAN RED RASPBERRIES.

At last our fruit growers are beginning to appreciate our native Red Raspberry. For a century we have been importing or raising varieties from the European *Rubus idæus*, and neglecting our hardy and excellent native *Rubus strigosus*, or common Red Raspberry, which is found almost everywhere, from Hudson's Bay in British America to the Gulf of Mexico. Of course, among the vast number of plants growing wild there are many natural varieties, and it would be indeed strange if some were not worthy of cultivation. It is true that an occasional variety was tried, but the foreign sorts being, as a rule, larger and to some persons of a more agreeable flavour, the native wildlings were neglected, few or no attempts having been made until quite lately to improve them. Then, again, those who had inclination and leisure for trying experiments in this direction appeared to overlook all other merits besides that of size and flavour, consequently they procured seed from the large foreign varieties instead of from our more hardy native species. The results are well known, and we can show plenty of seedlings of the tender foreign species which are equal in every respect to anything raised abroad. The Clarke, Brinckle's Orange, and President French are certainly good enough in every respect except hardness of the plants. After making what appeared to be rapid progress for several years in the culture of this fruit, there seems to be, of late, an inclination on the part of its cultivators to go back to the native wildlings and produce a new and more hardy race of varieties therefrom. This was the point from which our pomologists should have started in the beginning; but as we looked to foreign countries for all other kinds of fruits, why not the Raspberry?

Cause of the Change.

The increase in our population and in the number of cities and villages caused an increased demand for fruits, and experience with the foreign varieties has shown that they do not succeed except in every circumscribed localities. The Red Antwerp, which is the variety most popular for cultivation on the banks of the Hudson, is scarcely cultivated elsewhere, for the very good reason that it seldom succeeds outside of the region named, and even there great care is required in giving protection in winter. The bending down the canes in autumn and covering with earth, is not a very expensive operation, still it is an irksome task which cultivators will avoid whenever possible. Other sorts of the same parentage are also tender to a greater or less extent, hence the desire to produce more hardy sorts and get rid of the expense of giving protection in winter. In addition to the hardy character of our purely native sorts, it has long been known that they will thrive in a greater variety of soils as well over a far wider range of country, than those produced from the foreign species.

Too Many Suckers.

One principal objection urged against one of our native varieties, *R. strigosus*, is this peculiar habit of producing a great number of suckers from the subterranean stems and roots. If these suckers are allowed to grow without a check through the summer, they are likely to rob the main stool of the requisite amount of nutriment necessary to produce good strong fruitful canes. In other words, the strength of the plant becomes too widely distributed to ensure productiveness; but this may be readily avoided by hoeing off once or twice in the season, as we are obliged to do with the weeds. It is no more trouble to keep down suckers than weeds, and the operation may be performed at the same time without any additional expense; but if weeding and removal of the suckers on their first appearance are neglected, a plantation of even the best sorts will soon be ruined.

Promising Varieties.

The Wilmington, Kitland, Pearl, and several other purely native sorts have all been thoroughly tested, and promise well for general cultivation wherever the Raspberry is known to succeed. But there have been very few experiments made in the way of raising new sorts of our native Raspberries from seed; therefore there is a rare

opportunity for those who feel so inclined to produce varieties of great value. Every fruit grower can afford to try, even should he not succeed in making any great advance upon the older sorts; but the one who draws, so to speak, the lucky number is certain to be well repaid for his labour.

The above, written by a correspondent of *Moore's Rural*, whose knowledge of gardening subjects is extensive, reminds us of our neglect of the varieties of American Raspberry, which are sufficiently hardy for cultivation in England. We have seen with Mr. Tillery, and in Mr. Peake's garden at Wimbledon, excellent results from American Blackberries; and there is, in addition to these, various other important small fruits which well deserve a trial in our gardens, and would probably add agreeable variety to the dessert. The subject would seem to be more worthy of the attention of the Royal Horticultural Society than repetitions of trials of the same classes of plants year after year in succession.

CULTURE OF POT VINES.

THE time of year will soon arrive when we ought to be making some preparations, if we mean to cultivate Vines in pots, which are seldom grown with great success, though if managed in the following manner their culture is simple, but of course requires attention. The first step will be to select some nice strong well-ripened eyes of the Black Hamburgh, and I do not think you can do better than strike a few eyes of Foster's White Seedling, so as to have a variety. As yet I have found no white Grape to equal it, that is, for pot culture; of course there is ample time yet to secure what I call first-class pot Vines, as I never doubt success if I can only get them into a nice brisk heat in the month of February—not later. My system of growing them is as follows:—I procure some nice rich loam and one-third leaf mould, inserting each eye singly into thumb-pots; then plunge them in some nice bottom heat, and if they are well ripened eyes they will soon move. At this stage the compost will be required more rough than before; one-third charcoal is a good help, as it will keep the loam light and open. When this compost is all ready, and you have obtained a sufficient quantity of 6-inch pots, all clean and carefully crocked, sprinkle a little soot over the crocks, to keep out worms and also to feed the Vines. I find they do much better than they otherwise would do if a little soot is used; then, if they are nicely rooted, pot them on into the pots mentioned, placing them again in the same bed as before until they are nicely started. The compartment I grow them in is a common Cucumber pit, with the hot-bed made of dung, just the same as you would use for Cucumbers; the pit should be 16 feet long; plunge the pots into it at one end, then train the canes horizontally along the pit. After they have received the last shift, which will be into 14-inch pots, plunge them again into the same pit, there to remain until they reach the extreme end of it. In potting them the last time use about a third brick-rubish, not forgetting the soot as before mentioned; the dung ought to be 18 inches from the glass, and then all the training that is required is a peg to keep the leaders down; when they have reached the end of the pit, harden them off by degrees until you can take the lights off altogether for a few days; then, taking the Vines out, replace the lights, placing the pots containing the Vines outside, in the front of the pits; then lay the canes on the outside of the glass, as in this way they will ripen best, and, what is more, you get good fruiting canes in one year—in fact, I consider them far better than canes two or three years old. Pot Vines, if plunged in the way mentioned require but little water and also little attention, but a free supply of air should be given whenever the weather will permit.

G. M. A.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Pear Synonyms.—You were not quite right when referring to the *Fondante du Panisiel* (p. 457) to speak of the *Passe Colmar*. As a synonym of *L'Orpheline d'Enghien*, *Beurré d'Arenberg* Belge should have appeared, and *Arenberg*, not *Arenberg*, should have been printed. *Gluon Moreau* is not the synonym of the *Colmar d'Hiver*, but is a name justly applied to the *Beurré d'Hardenpont*; the *Bergamotte Fortunée* was raised by *Parmentier*.—F. J.

Marie Louise Pear.—In the notice of the Royal Horticultural (of Ireland) Society's winter show of fruits, held at the Rotundo last week, the *Irish Farmers' Gazette* remarks that in the class for the best dish of any variety of dessert, first, second, and third prizes were won by Marie Louise, which, when in good condition, has scarcely yet a rival. The Liverpool show of fruits was held almost on the same date, and the result was the same, Marie Louise being there also credited with first, second, and third prizes.

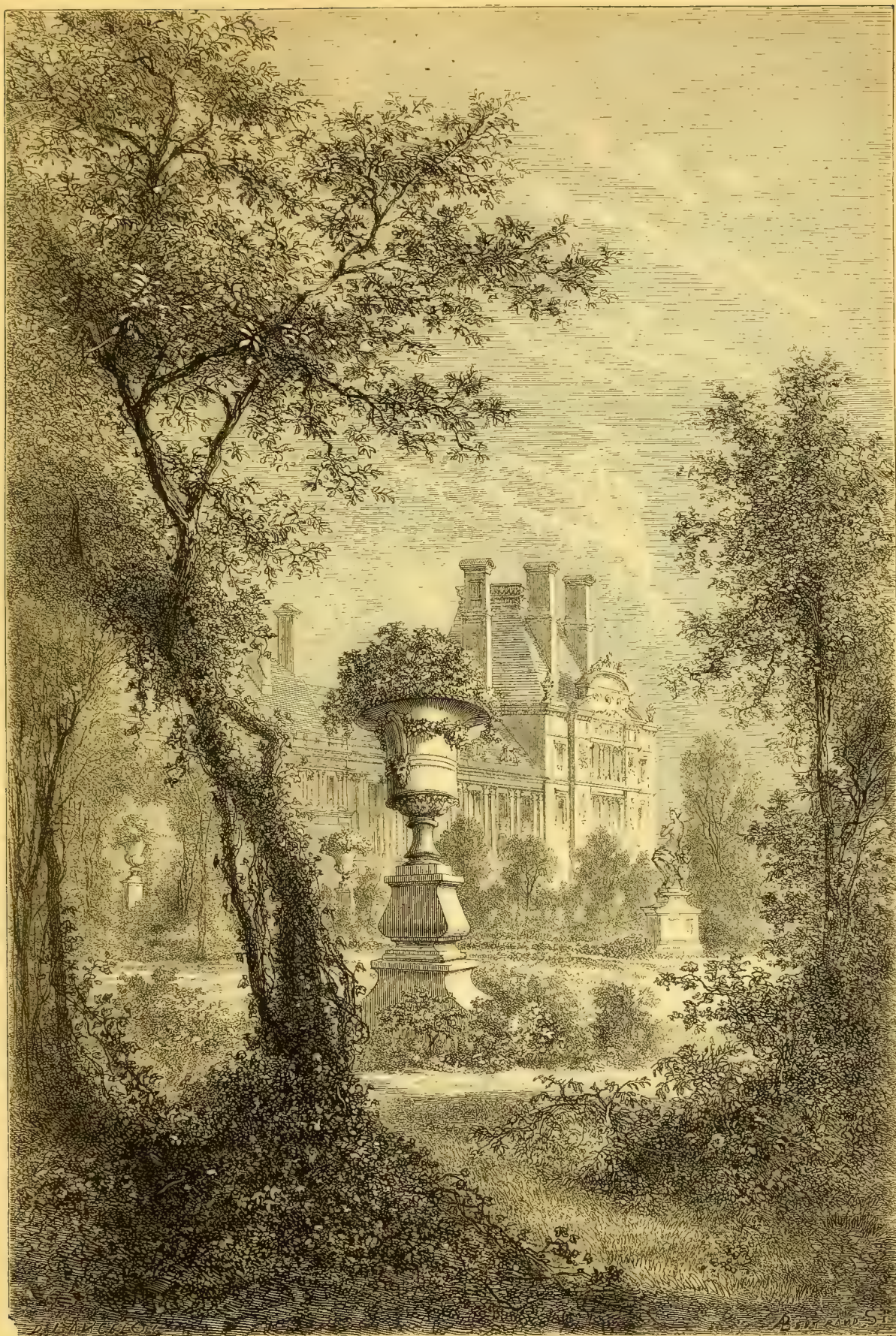
New Variety of Pine-apple.—I observe, in M. Linden's catalogue of stove and greenhouse plants for 1874, *Ananassa Mordilona* described as follows:—"A delicious new variety of Pine-apple, from the cool regions of Columbia. The fruit attains a weight of 12 lbs., is of an exquisite flavour, and of a beautiful violet colour. The native name is *Mordilona*." This species, if the description is a fair one, would appear to be very desirable. Have any of your correspondents tried it? Is it as good as it is described?—NATURA.

THE TUILERIES GARDENS.

AMID all the strife of parties, and notwithstanding the many vicissitudes of France, the public gardens of Paris remain uninjured, and even improve from year to year, at least, so far as permanent planting is concerned. It is true that the misfortunes of the country have cut short the large supplies that were so freely given for city gardening before the war, but it is, nevertheless, surprising to see how much attention is still bestowed on the public gardens. In saying a few words on the condition of the Tuileries Gardens in their best days (before the late war), we shall only allude to matters of some interest to all lovers of gardening, and not from the point of view of public gardening only. The most noticeable fact among the permanent plantations was the abundance of shrubs, flowering and otherwise, which were trained to attain their full perfection, or rather were allowed to attain it. Sufficient space for each plant to stand in grow secured for it fine development. There was none of that close-crowding, which is the rule in shrubberies generally; and, in consequence of which, most of our shrubs are merely effective in composing thickets by no means ornamental. This care for the individual shrub or low tree, as the case might be, was carried as far as the regular thinning of the branchlets of flowering shrubs, like the Lilac, so as to secure a well-formed tree and a stronger bloom. Stiff as the garden is, in consequence mainly of its wide straight walks cutting up all the great central spaces, it owes none of this stiffness to mere formal arrangements of plants, to elaborate geometrical display of beds, or to coloured gravels and the like. Vegetation, as in any Italian garden, which produces a good impression, predominates and relieves the effect of the statuary or stonework introduced. There is an abundance of verdure offered by richly-grown copings of Irish Ivy, and there are mixed borders of effective plants along most of the walks, while the squares have open carpets of well-kept turf in the central parts. The mixed borders include Lilac bushes, dwarfed by close annual cutting, Cannas, Roses, Honeysuckles, and well-chosen herbaceous plants. In autumn they are planted with spring flowers which blossom on till about the time of Lilac bloom, when the summer occupants replace them. The practice of relieving the stony glare from pedestals, statues, &c., by rich bands of Ivy and graceful mixed borders, as shown in the illustration, produces very happy results. Indeed, such garden-embellishments are only pleasing when carefully treated in this way, and, notwithstanding the means taken to tone them down, there were too many huge vases, statues, &c., in these gardens to permit of that repose which is the greatest charm of a garden. The Orange trees here are very fine, and form a costly relic of times when hardy evergreens were not so plentiful as they now-a-days are.

The London Fruits and Flowers of the Olden Time.

—These were celebrated for their fine quality and beauty; Shakespeare alludes to the fine Strawberries, for which the Bishop's gardens at Ely Place were celebrated; though the dingy mass of brick buildings by which what was then an open space is now covered, would lead few to surmise, when passing through that smoky region, that they are walking over what were once luxuriant Strawberry beds. The neighbouring Hatton Garden, betrays, by its name, that there was once beauty, where now ugliness reigns supreme; while many back "slums," more hideous still, retain the name of gardens, though in their parlous the very rankest weed could not now be persuaded to grow in the soot and filth poisoned soil. In Bath Street, Bethnal Green, where there is no longer either bath, or pond, or green, a nurseryman bearing the glorious name of John Milton, once raised fruit and flowers, which were celebrated for their excellence, and were sought for far and wide, all over the country. But the spot is now all filth and squalor; out of which, however, recent improvements are fast raising it, which is encouraging. It is moreover satisfactory to know that by "aiding Nature," as Shakespeare has it, both fruit and flowers may still be raised in London. The cheap rate at which sheets of glass may be made to intervene between the poisoned elements and natural vegetation, acting as a shield to ward off both smoke, and smoke-infected rain, renders its application available to almost any extent. Every house, indeed, may have a crystal-covered garden on its roof; as shown by the elegant terminal structure of glass which surmounts the handsome premises just completed by Mr. Barr, in King Street, Covent Garden.



THE PRIVATE GARDEN AT THE TUILERIES IN 1870.

GARDENING FOR THE WEEK. AND AMATEUR'S CALENDAR.

Roses.

IN visiting small gardens near London I have noticed the attempts of many to grow a Rose tree in their little plots of ground, and their great disappointment at not being able to obtain a single flower from their Rose bush, as it may be termed, for it is seldom more than a common green bush, being either the common Provence or old Damask variety of Rose, of which they have been able to obtain a small plant. Notwithstanding all they do, and the more they nurse and cherish it, to their great disappointment it does not flower. As Roses are so cheap, and can be obtained from any of our Rose growers from 12s. to 30s. per dozen, or from 1s. 6d. to 2s. the single plant, I would advise those who have Rose trees planted, and have met with the disappointment above mentioned, to have them all pulled out and plant Roses worked on the Briar stock. I recommend the Briar because if it once take root in any soil it is almost sure to grow. Disappointments are occasionally met with in planting the Briar, but they are rare. The Briar stock is found in marshy places, as well as in the driest banks, flourishing in hedgerows, and by obtaining a few horse droppings, and mixing them with the London soils, where fresh loam is dear, and, in fact, scarcely obtainable, the Briar will be found fully to succeed. In selecting the varieties, it is always as well to tell the Rose grower the kind of situation you wish to plant with Rose trees, and he will select for you the most suitable varieties. The two great points required are free-growing and free-flowering varieties, such as Hybrid Perpetuals, or Teas, if of the Gloire de Dijon constitution. There is plenty of time for planting Roses till March; although planting is generally recommended for November, I have seen Roses cut off plants for exhibition that have been moved by nurserymen very late in the season. The great thing to look after in late planting is to well water the plant, and if we get dry frosty east winds, to give the late-planted Rose tree some slight protection, so as to keep the wood from shrivelling; and, if this be found to be the case, syringe the bark occasionally—say every morning—so as to thoroughly damp the tree all over, and it will soon be found that the tree has commenced to make root. The bark will soon fill up plump and solid, and the buds will look prominent. If the Rose trees have been some time out of ground before reaching their destination, I would advise planters to make a puddle of earth and water nearly, or quite, as thick as paint, dip the roots into it, so as to give them a thorough coating over, and plant directly. It is only advisable to use this puddle in case the roots are thoroughly dried up. Some growers recommend it always, but in good soils it is not required. I have seen the turf plot covered with standard Roses in some of the villa gardens round London, and, however much such formality may be deprecated, the variation of colour had a much prettier effect than is produced by unsuccessful attempts to grow scarlet Geraniums and plants of a similar character.—G.

Flower Garden and Pleasure Grounds.

IN many instances the Oak and a few other trees have this season retained their leaves to a later period than is usually the case, a circumstance which may be attributed to the destruction of their first growth by the frosts which occurred during last May. The frosts, however, which have been recently experienced, have had the effect of bringing all, or nearly all, of them to the ground; and if not already cleared off lawns and walks, &c., this should now receive immediate attention. The leaves should be stored in situations as near as possible to where they are likely to be required, with a view to forming hot-beds and for other purposes. Stakes, ready prepared for supporting plants in flower beds, as well as in pots, can be purchased at a very reasonable rate, but, where this is not done, they may be made of deal laths, split, and cut into the various lengths likely to be required, and neatly smoothed by means of the knife. They should then have a coat or two of dark green paint, to render them as little conspicuous as possible; and the ends intended to be inserted in the soil, may, with a view to their preservation, be dipped in hot pitch. In supporting plants in flower-beds on the lawns, or elsewhere, it is of importance to conceal, as much as possible, the stake or stakes used for that purpose; but, unfortunately for the general effect, this circumstance does not always obtain the attention which it demands. Very suitable stakes for out-of-door purposes may also be made from the straight shoots of one or two years' growth, produced by stools of Hazel, Elm, &c., also the small straight twigs of the common Snowberry, and in all cases allowing the bark to remain on. It is also advisable to avoid the use of stakes formed of the shoots or branches of such trees as the Poplar and the Willow, which are almost sure to strike root and rob the plants they are intended to support. Pegs for the purpose

of fastening down Verbenas and similar plants, may also be prepared now, and may be made of Birch or the trimmings of sundry other trees, and the making of which will furnish profitable employment during cold and unfavourable weather. For the purpose of naming specimens of ornamental trees and shrubs on lawns, &c., elegantly designed metallic labels can be cheaply purchased from any nurseryman, made to be inserted in the soil, or to be attached to the plants, and of various patterns; but wood labels suited to the purpose of naming and numbering bedding plants in pots can be readily made from selected deal laths, which will only require to be rubbed over with white paint, when about to be written upon. Beds of late planted Pinks and Pansies are not unlikely to become uprooted by worms, or to become loose in the soil, and will require to be occasionally looked to, and to have the soil pressed gently round them and the Tulip beds may, with advantage, have a covering of old tan or leaf soil. Auriculas and other Alpine plants in frames, should have abundance of air during fine days, and should be frequently examined after dark with candle and lantern, as slugs are likely to attack them about this time, to prevent which a little quick lime or soot should be occasionally sprinkled among the pots. Give abundance of air, during fine days, to the hardier kinds of bedding plants, when they are thoroughly rooted. Shrubby Calceolarias of all sorts, Verbenas, *Koniga variegata*, *Leucophyton Brownii*; the latter, one of the neatest of all silver-edging plants, will all be perfectly safe in a cold pit or frame, well matted up during severe frost. Ordinary greenhouse temperature will suit *Pelargoniums*, *Petunias*, &c.; while store-pots of *Alternantheras*, *Coleuses*, *Iresines*, and the very useful and pretty dwarf *Ageratum*, *Imperial Dwarf*, which is more tender than its tall-growing congener, should occupy a shelf, or similar position, near to the glass, and in a night temperature not much under 50°.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Hardy Fruit.

IN many gardens bush fruits do not receive the attention which they deserve; hardly anything grown in a garden affords more pleasure or is of more use in the arrangements of households than an abundant supply of good Gooseberries, Currants, and Raspberries; and yet they are often met with in out-of-the-way places and in poor condition even in the best gardens. They, however, are worthy of a piece of the best ground, the richest feeding, and the highest cultivation. Now is the time to see to the latter, either by forming new plantations or renewing old ones; the former is generally the most satisfactory course to adopt. It is, however, absolutely necessary for a continuous supply not to do away with old bush fruits until the new are thoroughly established and well grown into a fruiting state. The most efficient mode of renovating old fruit quarters is to prune in the old plants somewhat severely, rub off the Moss or Lichen from their stems, paint the whole overhead with a paint formed of quick lime, soot, and cow-dung—at once cleansing, nourishing, and protecting; then remove the exhausted soil down to the roots, clear it away, and replace it entirely with manure (if enough can be had) or a half-and-half of good stiff loam and manure, a foot or so thick. If the ground is found dry, soak it through several times, during the winter months, with house-sewage, slops, and soap-suds, all of which are capital stimulants for bush fruits. In forming fruit plantations, trench the ground 3 feet deep, incorporating at least 1 foot of strong farm-yard manure with the earth in the process of trenching. If the soil is light, cow and pig manure will be the best for this purpose. Plant the bushes at any convenient distance apart, from 3 to 6 or more feet, according to the intention to crop or not, between the bushes, with vegetables, the mode of training, size of garden, &c. Rows 5 or 6 feet apart, and 4 or 5 feet between the plants, are good distances. Bush fruits also form nice furniture for the base of walls or for espalier rails, and make striking pyramids. Of course the latter remark does not apply to Raspberries, which are generally planted in rows from 4 to 6 feet apart, the stools being 1 yard or 4 feet from each other in the rows. Raspberries also furnish and fruit well on strained wire or espalier rails. As to varieties of bush fruits they are very numerous, and almost each cultivator has his favourite sorts. The following are generally useful and good alike for eating and preserving, viz., *Rough Red Warrington*, *Red Champagne*, *Ironmonger*, *White Champagne*, *Bright's Venus*, *Early White*, *White Crystal*, *Yellow Champagne*, *Sulphur*, *Gold-finder*, *Early Green*, *Green Glenton*, *Green Gascoigne*, and *Pitmaston Greengage*. A few of the most useful of the larger sorts in each colour are *red*, *London*, *Slaughterman*, *Crown Bob*, *Roaring Lion*; *white*, *Antagonist*, *Snowdrop*, *Freedom*, *London City*; *yellow*, *Catherine*, *Broom Girl*, *Leveller*, *Trumpeter*; *green*, *Trumpeter*, *Jolly Angler*, *Turnout*, *Queen Victoria*. Currants, *red*, *Cherry*, *Champagne*, *Dutch*, *Raby-Castle*, *Knight's Sweet Red*, *La Fertile*; Currants, *white*, *Dutch* and *Cut-leaved*; *black*, *Black Naples*, *Carter's Prolific*, *Ogden's Black*, *Lee's Prolific*. Raspberries, *Carter's*

Prolific, Barnet, Victoria, Fastolf; Red and Yellow Antwerp, October Yellow, October Red, and Black. The best time to plant is November, but bush fruit may still be planted up to the end of the year.—D. T. FISH.

Orchard-house.

Great care must now be taken to protect trees in pots from possible injury by frost. Place them close together, and cover the pots with plenty of straw or Fern; Barley straw, on account of its flexibility, will lie closer than Wheat straw, and, if it can be obtained, should be used in preference to that kind. Give no water until the severity of the frost has abated.—R.

Trees and Shrubs.

No time should be lost in preparing and trenching ground for planting deciduous trees and shrubs. Where it is intended to make large plantations and to plant thickly, the whole of the ground should be trenched deeply; but the sub-soil should not be brought to the surface, as plants do not often start freely in soil that has not been previously exposed to the sweetening influence of sun and air. In trenching, a good wide opening should be made, and the soil carted and laid in a ridge ready to fill in where the work finishes. Take the top spit off the next trench and remove in like manner, and the top soil of the next then comes right to lay on the surface, and so on all through the piece. If single specimens are to be planted, or the plants are to be placed far apart, it will only be necessary to dig large holes before planting, and the larger these are made the better, so as to thoroughly break up and loosen the soil, to allow the roots to ramify and get below in search of moisture. It is impossible for a plant to make satisfactory progress if this be not attended to, as it is difficult for the roots to penetrate beyond the limits afforded by digging a small hole. In planting, the roots should be carefully spread out and covered with fine earth, and when the hole is partly filled up, it is a good practice to well wash the earth into all the interstices of the ball by giving a copious watering, as it frequently occurs that large cavities are left under and about the ball if this practice is not resorted to. If the hole be then filled up without any further watering, and the surface well mulched, as it always should be, very few failures in planting will occur, as the mulching will stop the escape of moisture and prevent frost penetrating to the roots. After planting, every tree or shrub of any size should receive proper support to prevent them swaying to and fro, as it is impossible for root action to go on if they are constantly moving. In most cases one good stake, if properly placed, is sufficient. It should be placed in an opposite direction to that of the prevailing winds, which may affect the tree; but for large specimens it is necessary to have supports placed triangularly, taking care that they are not allowed to chafe or injure the bark of the tree, and by placing a good whisp of hay where the supports touch this may be avoided. I have been thus prolix in my remarks, as planting should be pushed on at this season; for the earlier it is accomplished the less labour and attention will the plants require to get established. It may be well to enumerate some of the most striking deciduous trees suitable for planting for ornament in conspicuous places. The Tulip tree (*Liriodendron tulipifera*), stands out almost unrivalled for its unique beauty, free growth, and gigantic stature. In addition to the ornamental character of its peculiarly cut leaves, it presents autumnal tints of the richest description, varying from the darkest mahogany to the richest claret, and its singular flowers add an additional charm. *Ailantus glandulosa* is a tree of majestic beauty and tropical appearance, fast growing, and not at all fastidious as to soil. It should have a place in every collection, as its distinct type of vegetation cannot fail to command admiration. The *Ailantus* is not suitable for very exposed situations, as the wood is not strong, and the tree is apt to be broken about by the wind. Many of the Birch tribe are valuable for ornamental planting, and have a distinctness of character quite their own, the pendulous varieties weeping down in the most graceful manner, while others are admired for the peculiarity of their bark. For ornamental planting the Acers should not be lost sight of, as they are amongst the most beautiful of deciduous trees of medium growth, both on account of their singularly cut leaves and the beautiful colours many of them assume either in spring or autumn. The young leaves of *A. japonicum polymorphum* are a beautiful scarlet when they first show, changing to a purplish colour which they retain to the autumn. *A. Colchicum rubrum* has leaves of a rich shining ruby and purple, and in hot dry seasons these colours are beautifully brought out. *A. fraxinifolium albo-variegatum* has beautiful green and silvery leaves; and, if planted in warm sheltered situations, backed by any dark-leaved plants, such as Yew or Holly, it is most effective. It is quite deserving a place in any conservatory, and is unsurpassed as a variegated decorative plant, as the leaves become very much larger than they are ever seen out-of-doors, and the variegation is much more pure and delicate. This and *japonicum*

polymorphum should be planted in sheltered situations; for, although perfectly hardy, they make their young growth early, and this is apt to be injured.—J. SHEPPARD, Woolverstone Park.

Kitchen Garden.

In the absence of evaporating pans or hot-water pipes, maintain a moist atmosphere in Mushroom-houses by means of syringing the walls and paths, but avoid over-watering the beds. A steady temperature of about 60° will be quite high enough at this season. In removing exhausted beds, any flaky pieces of spawn that show signs of vitality should be saved, in order to assist in spawning the new bed. An old friend of mine—a very successful Mushroom grower—used to spawn all his beds in this way. Very many of the failures in Mushroom culture arise from using old and inferior spawn. A thin covering of hay, that has been beaten with a stick to clear it of seeds and dust, should be placed over newly-made beds, and those in bearing also, for the double purpose of checking evaporation and for maintaining a steady heat. If woodlice are troublesome, pour boiling water round the edges of the beds close to the walls, after they have retired to their hiding places. Take advantage of frosty weather to get all wheeling done, so as to avoid injuring the paths. Few things are more conducive to cleanliness in a kitchen garden than a sufficient number of strong serviceable scrapers placed at the most convenient places for going on and off every border and quarter in the garden. A cheap kind of scraper suitable for such purposes may be made by any blacksmith. It consists simply of a piece of iron in the form of a T, the perpendicular portion being driven half-way into a stump of wood inserted 18 inches into the ground in order to keep all firm and steady. Take advantage of bad weather, when other operations come to a standstill, to make a lot of strong labels for labelling seeds and plants in spring. Whenever ice of sufficient thickness can be obtained, ice-houses should be filled without delay. Some recommend salt to be scattered amongst the ice in the well; others, again, advise water to be poured over it, in order to assist in congealing the ice into a solid mass; but I cannot say that I have ever seen any advantage to result from the adoption of either plan. The great thing is to have the ice thoroughly broken, and afterwards well rammed in the well; if this be properly done, there need be no fear about the result. By laying down a platform of planks at the entrance of the house, on a level with the sill, so that the carts can be backed up to shoot the ice upon the platform, the work of breaking will be better and more expeditiously done than it otherwise could be. A temporary platform of this kind can easily be made by laying planks side by side, with a stout piece of timber for the carts to back against, with two or three bundles of straw at each end. The first load of ice broken upon it will fill up all cracks and render the platform firm and solid. Where there is no ice-house a large stack may be made in the open air; and even where an ice-house exists, if large quantities of ice are required, it may be advisable, if ice can be easily obtained, to build a stack outside. It should be built on sloping ground for the sake of perfect drainage, on the north side of a belt of trees or plantation, where it is shaded from the mid-day sun. Having selected the site and decided upon its size, make holes with a crow-bar 18 inches apart all round, except just at the mouth or entrance, which should be left 3 feet wide. Into these holes insert stout poles, about 6 or 8 feet long, and let them be driven in firmly, then lace Ash or Hazel rods all round, not necessarily close together, but sufficiently near to keep up the straw inside in which the ice is packed. A good thickness of straw must be used, in order to keep all air-tight, and the whole, when completed, should be thatched in closely and thickly. Dry leaves form an excellent covering to heap over all, and a thin coating of straw over those again will keep them together.—E. HOBDAY.

Cottagers' Gardens.

All vacant portions of vegetable ground should now be deeply dug, or, if possible, trenched, and the earlier this kind of work is done in winter the better will the soil be for cropping in spring. Finish the planting of fruit trees as soon as possible, and give such as have been moved a good mulching of partly decayed manure, an application which will also benefit Strawberry and Raspberry beds. Prune standard and dwarf fruit-trees, except in places where the buds are liable to be attacked by birds, when the later pruning can be deferred the better. Celery should be finally earthed up, and some protecting material provided for covering it in the event of severe frosts. Potatoes, whether for seed or immediate use, should be kept as cool as possible, but, at the same time, effectually secured from frost. Flower borders should now be thoroughly cleared from all decaying vegetation and lightly forked over, as the bulbs will soon be coming through, and, if disturbed, after growth has commenced, they are easily injured.—J. G.

THE ARBORETUM.

PLANE TREES IN LEICESTER SQUARE.

PLANE trees are being planted in Leicester Square. This is a good omen; for trees that made many a nook and corner of old London pleasant places, have been fast disappearing, and with but few attempts to replace them. Whether the remarks made by the horticultural press in noticing the improved state of the square, were the means which led to a colony of Plane trees being planted in the space, or whether the idea may have arisen from sources entirely independent of those suggestions, is immaterial—the fact is sufficient. These Planes, if they have been properly planted, will, no doubt, thrive well, and serve to prove that at all events Planes will do well, even in the very heart of London, if there be anything like sufficient light and space, as in Leicester Square. The new opening from Oxford Street to the north side of this open space having been decided on by the Board of Works will impart to it much increased importance; and, in approaching it through the densely built portions of Soho, the group of trees in the now handsome arena will form a light and pleasant vista terminating the dark avenue of approach between long lines of houses of dingy brick; and, by increasing the value of the property, will eventually lead to the erection of a brighter and better class of buildings along that line. The proposed new approach to Leicester and Trafalgar Squares direct from Oxford Street will be very easily effected by the demolition of a few houses on the north side of Leicester Square, and a few more in the rear, which will at once open up a direct communication with an already existing line. The carrying out of this plan is so obviously simple that the only wonder is it was not effected long ago. When completed, the excellence of the alteration will be so apparent, that it will doubtless lead to further innovations almost as loudly called for—namely, an entirely new laying out of the irregular network of old and narrow streets, which form a very objectionable feature in that part of the metropolis, so close upon the handsome regions of Waterloo Place, Pall Mall, King William Street, and the destined opening direct to the Embankment, over the site of the demolished Northumberland House. These alterations will serve to connect our great leading West-end thoroughfares together, an improvement much to be desired.

H. N. H.

ACTINIDIA VOLUBILIS AND KOLOMIKTA.

THE *Actinidia volubilis*, which, many years ago, under the generic title of *Trochostigma*, was considered synonymous with the *Actinidia Kolomikta*, should certainly be re-classed with the species of *Actinidia* to which it properly belongs as is shown by its presenting all the leading characteristics of that genus. The accompanying illustrations show that some differences exist between the *Actinidia volubilis* and the *Actinidia Kolomikta*; they are, however, both natives of Japan, and are, especially the *volubilis*, well worthy of cultivation as climbers for covering bowers and arbours, trained Vine fashion. They have, however, one drawback which we must notice—they flower so very early in spring that their buds are often destroyed by frost, which not only checks their growth but prevents their blooming again during that season. They will grow in almost any soil, but they succeed best in a cool light one. They may be raised from slips and cuttings, which nearly always strike root well. The *Actinidias* are climbing Ternstroemiaceous shrubs, natives of the Himalaya, China, and

Japan. They have entire leaves and axillary flowers, and make useful wall plants.

C. H.

The Annual Lopping of Ornamental Trees.—The *Bulletin du Cercle Professoral* of November, 1872, has the following interesting notes, by M. Fr.

Burnevich, Professor of Arboriculture in Ghent, on the advantages of annually lopping certain ornamental trees:—"In an article entitled 'The Culture of *Paulownia Imperialis*' we have made known to our readers a very simple method of obtaining from this tree annual shoots, which, in size and beauty, will vie with the most handsome herbaceous plants possessing coloured foliage. We then expressed an opinion upon the probable success of annually lopping certain other trees. We are now able to state that the *Ailantus glandulosa*, when planted in good soil and annually lopped, produces one or several shoots, which will attain the height of 7 feet, throwing out to a distance magnificent feathered leaves, which resemble gigantic Fern fronds. A splendid

annual vegetation is also obtained by applying this culture to *Catalpa syriaca* (*Bignonia Catalpa*), *C. Bungei*, and *C. Wallichii*. The handsome variety introduced by our excellent colleague M. N. Gaujard, nurseryman at Ghent, becomes, by lopping, one of the most beautiful of ornamental trees for lawns. The *Rhus elegans*, *R. juglandifolia*, and *R. typhina*, are also plants to which this yearly



Actinidia volubilis.



Actinidia Kolomikta.

system of pruning may be applied with good results. The *Rhus glabra* laciniata, a still more recent acquisition for the plantations of landscape gardens, is one of the most graceful of plants when producing annual shoots. We must not forget, also, to mention the elegant *Aralia japonica*, spinosa, and Maximowiczii, nor the beautiful *Dimorphandia Mandschuricus*, which should be more widely known. The public will, without doubt, soon be convinced that a grand secret lies in this system of annual lopping. Trees treated thus will yield leaves quite as handsome as those afforded by the *Wigandia*, *Udea*, *Ferdinanda*, *Heracleum*, and others, in the gardens of Paris and London."

Fertilising Aucubas.—Your correspondent, "W. N." (p. 525), may easily induce his Aucubas to bear berries without placing the plants in frames and without the expense of purchasing pollen or even the use of a camel-hair pencil. All he has to do is to graft a spray or two of the male plant on any female which he has. A few years ago I grafted on some female bushes, some of them from 10 to 20 feet in diameter, a spray or two of the male Aucuba, and they have been yearly covered with berries ever since. One graft will do for a bush a yard in diameter. Planting or placing males by the side of the females I have not found to answer so well as grafting. The grafts should be inserted at the top of the bushes. The green variety sets larger clusters of berries than the spotted one; when I graft, which is in May, I remove the tips of the shoots of the male plants, take similar tips off the females, and graft the male tips upon the female plants; a little firm clay is then squeezed round the ligature. In the autumn an examination is made, and, if a union has been effected, the ligature is taken off. The following spring, grafts put on in this way will flower, and the work is accomplished not for one season only, but for many without further trouble.—H. M. E.

Raising Black Walnut, Butternut, and other Trees.—Will you give me directions for preparing and planting nuts of the Chestnut, Black Walnut, and Butternut? Should they be kept fresh till spring by putting in moist sand, and stored in a cellar, or planted in rows in autumn, and allowed to freeze during winter? Also the proper time to gather seeds of the Sugar Maple and White Elm, and how and when to plant?—L. O. [The nuts of the Black Walnut and Butternut should be gathered in autumn, when ripe, and placed in heaps on the ground, covered with inverted sods and some earth, so as to prevent too frequent freezing and thawing. They should be planted in spring, in good soil, about 2 inches deep. Chestnuts must not be allowed to become much dried; but, as soon as gathered, mixed with moist sand, and thus kept damp (not wet) all winter, in a cool place, and planted about an inch and a half deep in spring. Before mixing with sand, they should not be placed in large heaps together, or they may ferment and spoil. The common failure to grow is because the horny shell or covering and the kernel are permitted to become hard and dry. The Elms ripen their seed early in the season, and, as soon as gathered, they should be planted, not more than 1 inch deep; and, if the soil and weather are moist, half an inch will do better. The Sugar Maple ripens seed in autumn, when it may be sown, or mixed with damp sand and kept till spring in a cool place, taking care it does not become wet and rot.]—*The Cultivator*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Ivy and Dry Houses.—At one of the meetings of the British Association at Belfast, Mr. Frank P. Fellows confused as erroneous the idea that plants like Ivy growing on the side of a house tended to make the walls damp. He knows a row of houses, the only dry one among which is covered with Ivy.

The Honey Locust as a Hedge Plant.—In a discussion among leading horticulturists at the city of Rochester, the Honey Locust (*Gleditsia*) was pronounced the best of all deciduous hedge plants. This opinion was shared in by Messrs. Elwanger, Barry, and other of the most extensive planters of that region.

Trees for Hedgerows: H. S. Any of the following trees will suit for hedgerows:—*Ulmus campestris*, *glabra*, *suberosa*, and *montana*, with their varieties; Oak, Ash, Sycamore, and the Black Italian Poplar, when planted 50 yards apart, are also suitable. The stems should be close and gradually pruned of side-branches until 15 or 20 feet in height. We should advise the growth of the better kinds of hardy fruits in such positions.

The Golden Chestnut (*Castanea chrysophylla*).—A lovely small tree from California; leaves, bright golden yellow underneath. At Heatherside it has proved quite hardy, having stood out unprotected for three winters without injury. Last year's leading shoot measured nearly 3 feet. It is so distinct and so beautiful that it ought to have a trial in every collection.—*Heatherside Manual*.

Root Fungi.—On taking up a young specimen of *Pinus Luscombiana* a few weeks ago, which I had planted out in the reserve garden to make a summer's growth, and have now removed under glass, I found that nearly every root and rootlet was covered with a snowy white sort of mildew. What is the cause of this disease, and what had I better do with the roots? I had noticed that the plants had made very little growth during the past year, but could not imagine what the cause was.—H. B. [The roots have, doubtless, become attacked by Fungi, owing to their having been placed in contact with dead stumps or roots of some kind. You might try the effect of shaking the soil away from them, washing the Fungus off with tepid water, and re-potting; but the better way would be to throw the plant away and get another.]

ARCHITECTURE AND LANDSCAPE.*

BACON commences his essay on building with the curt axiom, "Houses are built to live in, not to look on." The observation, the truth of which, from one point of view at least, we ought to be ready to admit (for is not the useful the foundation of the true in architecture?) savours of the practical wisdom of a philosopher not to be taken in by shows or pretences, and yet the learned Chancellor forgot one-half the truth. He forgot that houses or buildings of whatsoever class have to be "looked on," whether built for that object or not. Pictures and statues are made emphatically to be looked at, though unhappily they are not always worth looking at; but there is this to be said in their case, that if you are displeased with them you can always put them out of sight somewhere or give them away to a friend, or, if a man is unfortunate enough to admire a bad painting, at any rate he does it in private, and his taste is not necessarily imposed on his neighbour or on the public at large. But the case is otherwise in regard to a building. Be it good or bad, there it is; you can neither get rid of it nor hide it. It may be a blot upon the landscape, an annoyance to every one with senses open to such annoyances, but so long as its owner is satisfied there is no appeal; indeed, even if it be otherwise, and if the owner or his architect be stricken with repentance for his deeds, the toy is too expensive a one to be removed and replaced. It, therefore, behoves those who are going to place such an object permanently on the face of the country to consider well what they are doing, and to contrive their production so that it may not be a stumbling stone and an offence to the traveller in search of the picturesque. But this very relation of the building to its surroundings, this self-assertion of the edifice as a portion of the scene in which it stands, if it makes one of the difficulties, ought also to be one of the glories of the architects, for this is a kind of compensation to him for the restriction of his art in some other respects. It is useless—at least it seems so to me—to claim for architecture anything like that intensity of interest which belongs to works of art dealing with human feeling and human expression. The most picturesque combination of wall and roof and turret, pleasing though it be, in itself speaks to us in but an uncertain language compared with that which addresses us from the canvas of a Leighton or a Gérôme, from the marble fashioned after the thought of a Foley, a Woolner, or a Carpeaux. Nor does the production of a picturesque building require anything like that genius and concentrated study by which alone, and then only with the devotion of a lifetime, the complete power over expression by means of the figure can be mastered. But the architect is the generaliser among artists. The charm of his work is not in itself alone; it is in the understood or expressed relation which it bears to human life on one side, and to external Nature on the other. The mansion or the cottage is not the mere stateliness of marble and mosaic, the mere picturesque of timber and tiling. It represents—or should represent—the decoration of the daily wants of life on the one hand, and the relation of that to the grander decoration or scenery of Nature on the other. Inside his building he need not disdain attention to the minutest comforts or graces of life; outside it he need not restrict his interest within any narrower limits than are bounded by the visible horizon. From wherever his building is seen it becomes a part of the scene, often the central point of interest in it; it breaks the declivity of the hill side, or it aids the perspective of the level plain; it rises from the bosom of dark masses of wood, or it looks out like a sentinel from a bleak sea coast; but in each of such situations, or in whatever other site it may be placed, it will be interesting and suggestive in proportion as its architect has appreciated the predominant character of the scenery, and has known how to render his building in harmony with the genius of the place, and with the perspective and contour of the predominant features of the landscape. At the same time it is no easy matter to theorise, even, upon a subject which from some points of view appears so vague, and which certainly is scarcely reducible to fixed rules. But hints and suggestions may be gained in looking at what has been done, and comparing the effects of different combinations. Now in regard to the relation of that most conventional and most refined type of architecture—that of the Greeks—to landscape, there is much to interest us, and a good deal has been said on the subject, and that, it must be confessed, in somewhat contradictory tones. The late Professor Cockerell was of opinion that the Greek temples were specially adapted for effect in somewhat rocky and desolate sites, or that the Greeks specially accommodated them to such sites by giving heavier proportions than in plains; the one statement seems rather contradictory of the other. A contemporary French critic confirms this view, and thinks the temples were designed with special reference to their sites. A distinguished philosopher, Mr. Herbert Spencer, has on the other hand expressed the opinion, in an essay which shows how loosely philosophers can write when

* Read before the Architectural Association, by Mr. H. H. Statham, Jun.

they get on unfamiliar ground, that regular architecture cannot by any possibility be suited to an irregular site, and that any picture representing such a combination is essentially unpicturesque. Where shall we find the concord of this discord. I think the philosopher must go to the wall.

Greek Temples and their Surroundings.

The remarks of Professor Cockerell on the temples of Ægina and Bassæ are sufficiently to the point to be quoted. He says that "the Greek temples were seldom situated out of or away from cities except on special occasions, as when they were built on the site of some supposed remarkable event. When temples were thus situated, their remoteness, as well as the grandeur of the scene and the wildness of the country by which they were approached, formed a powerful contrast with the highly-finished object towards which the footsteps of the devotees were directed. . . . Surrounded by such scenery, we at once admit the fitness of these sturdy and stern proportions, both of the parts and of the whole, so much in accordance with the nature of the site, but so lamentably ineffective in a less conspicuous situation, or when placed in the midst of a crowded metropolis, and on a level with the public streets." I understand this passage as referring only to these temples of unusually heavy proportions. The author continues:—"So sensible were the Greeks of this fact, that we find different proportions generally adopted when the temple was placed on a plain or in a city. Generally, too, we may be permitted to remark that architects have adopted a low and horizontal system of architecture to a lofty country, and a perpendicular and aspiring one to a level and flat district, as if conscious of the inefficiency of all attempts at loftiness amid the wonders of mountain scenery, and seeking rather by the regularity of Art and succession of horizontal lines to present a contrast to these rugged irregularities of Nature." Your excellent secretary, Mr. Clarkson, was kind enough to point out this passage to me when I first mentioned the subject to him. Cockerell's remarks point to Greek architecture as a style of contrast to, not of sympathy with, the landscape—contrast at least in regard to the lines of the composition. In regard to the relation to the sentiment of the landscape, his remarks are not quite consistent, as he in one passage attributes effect to the contrast of the finished object of Art with the surrounding rugged scenery, and in another to the harmony of the stern proportions of the building with this same character of scenery. I believe the latter is the correct view. Contrast of the composing lines, and harmony of the general proportions and character of the building and the scenery, are conditions not only perfectly compatible with each other, but which, I believe, we shall generally find existing in the most fortunate instances of architectural and scenic combination. We see the same kind of effect in the restoration of the temple at Agrigentum by M. Viollet-le-Duc, engraved in the October number of the *Gazette des Beaux Arts*; and I do not think this building would be nearly as effective as part of a picture if it were placed on a level lawn; at the same time, the harmony of sentiment is preserved here, for there is nothing wild or stern in the site, only a degree of picturesque irregularity, softened, to a certain extent, by the forms of the foliage. It is of some interest to note how painters look at the subject, and in what combination they find their best or most favourite effects. If we take one of the great painters who has made most use of architecture in his landscapes—Claude—we find him in a great measure carrying on the subject for us. Sketching chiefly in Italy, Claude used in his classic architecture almost exclusively (indeed, I think quite exclusively, so far as columnar architecture is concerned) the taller and slighter proportions of the late Greek and Roman orders. His "Liber Veritatis" gives a number of instances of the combination of this school of architecture with landscape, often of a more or less picturesque character, but not stern or rugged, and in many instances of a quiet and restful character, where his favourite architecture is combined with sloping banks and foliage. Now this late classic of Claude's goes remarkably well with the trees and the rounded contours of the land, but the early Doric I think we feel instinctively would not do so unless in a ruined state; and a building in that condition loses its original character a good deal, and becomes, in fact, more or less a part of Nature. There is one curious instance in which Claude gives us castles and towers at the foot of a rocky hill and a circular temple on the top; this seems to be out of place rather; but there is this to be said, that though in a northern climate we connect the idea of inclemency and exposure with a hill top, the absence of this association in a milder climate may give a different effect. We find, then, in the greatest painter of classical landscape (unless we except Gaspar Poussin) the classic columnar architecture associated in the main with landscape either of a quiet rural nature, or with picturesque but not wild or rugged scenes. If we wish to compare with this the impressions of a painter who has shown a special predilection of com-

binations of Gothic architecture with landscape, we need not go far for instances from a far mightier hand than that of Claude. If the latter is the artist of classic landscape, Turner is still more uncontroversially the artist of romantic landscape, and with that of romantic or "Gothic" architecture. No painter has more largely employed architecture as an integral part of his painted poems—none has more intensely felt its relation to landscape, its value as assisting and intensifying the feeling of a scene, and as giving point to a composition both in regard to outline and to the opposition of light and shadow. Over and over again we find in the works of this king of landscape painters, that it is a building which gives the key to the expression of the scene—weather it be a tower rising black and threatening against the light—a minster or cathedral crossing with its vertical lines the level evening sky, or standing as the centre of the radiations of the rising sun, which seems to form an appropriate glory around it—a castle which seems to stand the one unshakeable object amid the driving tumult of a gale on some bleak coast—a spire which sends up a pyramid of light into the sky—or perhaps some one small building, insignificant under some aspects, but which has been seized by the painter at the moment when a ray of sunlight has found it out, and forms on the canvas the one spot of high light to which all the rest is subordinate, and in default of which the power and meaning of the work would vanish at once. It surely adds one more motive for our interest in architectural work, both in regard to itself and its relation to Nature, to notice how its monuments have been incorporated by scores, by the hand of the greatest delineator of landscape the world has ever seen, in works whose poetic power will be felt and admitted as long as canvas and colours can keep them in being. It is worth while to notice, also, the distinction between the objects aimed at by these two typical landscape painters of the classic and romantic school respectively. Claude, in his sketches and studies especially (and it is in this form that the bent of an artist's nature is most truly discernible), is evidently aiming chiefly at a graceful and picturesque contour and outline composition, and an idyllic grace almost peculiar to himself. Turner is epic rather than idyllic, and it is at broad and massed effects of light and shadow that he mainly aims—many of his "Liber Studiorum" sketches being, in fact, little more than studies of effect, in which outline is secondary or nearly lost. In the landscapes in which his buildings form such important features, the attention is more directed to the wide sweep of distances, or to the expanse of sunlight and cloud shadows over foreground and middle distance, than to those picturesque irregularities of rock and foliage composition in which Claude found such characteristic pleasure. And the favourite architecture of the two painters evinces the same kind of contrast, the same leaning towards elegance in the one, and towards mass and grandeur in the other; and it would not be possible to point to a more striking instance of the distinction between the classic and the romantic feeling in landscape architecture than we find on turning from any of Claude's elegant compositions, with their colonnades fringed by light foliage, to such a threatening mass as that of Turner's Kidwelly Castle—a kind of thing that no one would have thought of painting before the present century.

Gothic Architecture in Connection with Landscape.

We shall find hints in further consideration of this subject from some of these specimens of Turner's treatment of architecture and landscape; but the important part which Gothic buildings play in his landscapes may lead to the reflection, how far the builders of our mediæval cathedrals and churches had any view to their effect in regard to the landscape. Generally speaking, I am strongly inclined to think that the feeling for landscape is a very modern one, and I am somewhat sceptical about the perception of picturesque beauty with which the Greeks are credited. The Gothic architects, however, seem certainly to have had an instinctive feeling in regard to the effect of site upon a design, especially noticeable if we contrast the design and position, for instance, of Lincoln Cathedral with that of the tall thin spires that rise up from the flat country round it. There are no landscape painters, no Turners and Claudes of the period, to show how the buildings appeared to them as matter for picturesque illustration; but I noticed the other day, in turning over some of the illuminated MSS. at the Lambeth Palace Library, some sort of indirect evidence on this point in the filling in of the background to the initial letters in one or two works. Leaving, however, the consideration of what painters of the past have made out of architecture in connection with landscape, can we, from the hints given us by these, and from other sources, arrive at anything profitable or suggestive towards providing material for painters of the future by so combining our buildings with the scenes in which they are placed that each shall heighten the effect of the other, and that the building, instead of appearing an intruder on the landscape, shall rather appear to be its natural complement—the last grace

added to the scene? If it be said that the subject is vague, that you cannot lay down rules in regard to it, that success in combination must be the result of innumerable small circumstances and of generally cultivated perception of sentiment rather than of rules, let all this be true (as I think it is), still that is not a reason for avoiding all consideration of the subject, but rather for urging attention to it. Does it receive sufficient attention at present? There is a story of a man being brought up in a New York police court for illegally painting an advertisement on the pavement, and that the charge against him was worded "for defacing natural scenery." Would not the magistrates in some districts have their hands pretty full if all the authors of buildings against which such a charge could be levelled were brought up before them? We may congratulate ourselves on having improved in the main the state of things since Repton had occasion to say in his work on "Landscape Gardening":—"I have often seen the absurdity of designs being made for a house where the builder had never seen the situation." Scarcely any architect would do this now; but I think it is true as far as this, that not unfrequently preliminary sketches are made before the site has been seen, and then the upshot of the matter is that the original idea, made independently of the site, is fitted to the site as well as may be, rather than disturb an idea at once formed.

Four Kinds of Sites.

Looking at the question a little more generally in regard to the nature of the problems to be dealt with, we may perhaps consider landscape, from an architect's point of view, as presenting four different classes of site—hilly country, flat country, wooded sites, and those in contiguity to water, whether on the coast or inland. We noticed the almost universally admitted theory and practice which suggests that the hills should be occupied by somewhat low and solid-looking buildings, and the plains by loftier and less bulky ones. This is not only, however, for the reason mentioned by Cockerell in the quotation relative to the Greek temples, viz., that architects were afraid of seeming to compete with the mountains, but also because the exposed nature of a site on the summit or brow of a hill inevitably suggests the necessity for strength and solidity of construction; the castle-like building of square proportions and massive walls boldly mounts the hill, the more delicate building with its fragile spirelets and lighter construction keeps under safe shelter at the base. But this treatment of hill architecture is subject to modifications. Mere elevation is not alone in question, but the character of the eminence—for what will look well on a bare and precipitous or rocky eminence may look very unsuitable on one of gentler and more rounded character. Looking at Turner's view of Powis Castle, for instance, I should say that a modern architect would make a great mistake were he to place a building of such massive and castellated character in that position in such a scene. As it stands, it has the prestige and association of antiquity to hallow it, but, as a new mansion, it would be a mistake. That regularly sloped hill, with the platform on the top, affords a suitable basis for a structure of less stern and more palatial character. So also Kilgarron Castle is picturesque enough as a view with an old castle in it, but the wooded slopes indicated in the original, at least, would scarcely bear so rude an intruder if in a modern dress. In general, rounded undulating hills require the more modest and ornate treatment of the architecture; square and abrupt ones, approaching to the nature of precipices, demand a correspondingly stern character in any buildings that are to look bold enough to have a right to claim footing on them. And something depends on the manner in which the building is accommodated to the ground. On a comparison of examples I think it will be recognised that the quieter and more reposing effect is gained when the building appears to be placed flat on the surface of the ground, even when on a considerable elevation; the sterner and more monumental effect when it is so treated that its basement is at an irregular level, at one point reaching down into a declivity of the site, at another seeming to climb into a ledge or projection. We see the former effect in Turner's view of Blenheim, which stands fair upon its plateau as a level and extended base, with a look of entire repose; this view struck me as interesting, also, as it shows Turner for once indulging in a style not unlike Claude, in the effect of the classic foreground architecture and wooded landscape. In Claude's own compositions it is probably to be attributed to this level base line that his little circular temples, though placed sometimes on rocks and precipices to match, do not look out of keeping; they have no appearance of really belonging to the situation—they rather look as if they were put down there for ornament, and might be taken up again. Instances of the contrary effect are seen in the remarkable view of Lillebonne, from Turner. Here the castle seems to rise in the midst like an outgrowth of the rock on which it stands, and into which the outer angles of its towers reach down, while, at the

inner angles, the rock seems to climb up to the towers. A small sketch from Mr. Ernest George's book of "Sketches on the Moselle" shows the same kind of effect. Treated thus, a building conveys the impression of being an integral part of the site on which it stands, and, when it can be used, there is no more certain source of architectural power and durability of expression. I have noticed this even in such comparatively common-place things as the tall old Edinburgh houses in the High Street and elsewhere, of which even the street front looks high enough, but when you come to the back you find the masonry descending sometimes as many storeys below the street level to find a firm footing on the steep slope. The effect is quite surprising to eyes accustomed to the flat basement lines of many other towns. Buildings placed on the site or slope of a hill are susceptible of rather different treatment from those on a summit. There is not so much room for boldness, for the building is, as Dugald Dalgetty would have said, "slighted or over-crowded" by the hill, and in general a square low form seems the most suitable for hillside architecture. This is especially the case when the hill forms a tolerably regular slope, in which case the form of a rather horizontal building makes a kind of break or parenthesis in the slope when viewed in profile. Irregular groups of buildings on a hillside are nearly always pleasing, and are a favourite incident with Turner. But single buildings in such a situation are generally best kept long and low in outline; and while a building on the summit of a hill seems to demand some sort of cupola or finish, by way of crowning the edifice, on the side of a hill this is lost, and is not needed, as the building never suggests itself as a final point in the composition, but only as an incident *en passant*. An instance of a remarkably picturesque terminal building on a high summit, varied in sky-line and yet sufficiently solid and massive for the position, is given in a sketch from a photograph of a palace at Cintra. Buildings on a flat and undivided plain present little for remark, as the architecture in such a case has it all its own way, so to speak, and the only thing to be observed in relation to the nature of the site is to take care that the building has sufficiently elevated features to compensate for the low level of the site and the want of a position of vantage to see it from, and to enable it to be seen at a considerable distance. This is in regard to a wide plain out of the neighbourhood of mountains; but in a low site surrounded by hills the case is very different. A certain elevation is still necessary, but it is useless for the architect to think of competing with the mountains, though I know one or two cases where this has manifestly been attempted (in regard, I mean, to massiveness of scale and general proportionate size), and his best chance of a pleasing effect in such a site is to accept the humble position in which he finds himself in regard to Nature, and to give to his building that appearance of simplicity and repose which will cause its position of retirement under the shadow of the protecting hill to appear perfectly natural and suitable. In the case, again, of a country neither absolutely flat nor bordered by hills, but varied by tolerably uniform and quiet undulations, a long horizontal treatment of building will be effective as affording a kind of definite line for the eye to rest upon amid the wavy and uncertain contour of the landscape.

Architecture and Trees.

The combination of architecture with a wooded country seems a more complicated matter for consideration than the two previous conditions; partly, perhaps, because we are accustomed to associate with trees such a multitudinous idea, both in regard to the number of species and the endlessly varying lines and breaks of contour which they produce. Yet by one of the most respectable authorities on such subjects the matter is condensed into a very few words. Repton, in his work on landscape gardening, says that, from a landscape gardener's point of view, there are only two styles of architecture, the "horizontal" and the "perpendicular," or "Grecian" and "Gothic;" unless, he adds, we may name a third under the head of the "fantastic," or, it may be called, the "Chinese." The worthy gentleman meant what we should now call "tea-garden" architecture, still preserved in many of our parks. His views about architecture, if we consider them in detail, are old-fashioned enough, but there is plenty of good sense and good taste in Repton, and many of his suggestions are very well worth considering in the present day. Proceeding with his simplification theory, he classes trees also in two main divisions, the round and the pointed. As to the relation between these and the two styles of architecture, he is of opinion that "trees of a pointed or conic shape have a beautiful effect with Grecian architecture; though an association with the ideas of Italian paintings, where we often see Grecian buildings blended with Firs and Cypressess, may also have some influence on the mind." There is no doubt that association of this kind does influence us very much in such matters; so much so that it is not easy always to discriminate between the result of association and that of unbiassed judgment. But I am inclined to think Repton's

decision is a perfectly reasonable one, and that trees of a vertical tendency, and of a tolerably symmetrical character of growth, do blend well with a horizontal building. At all events I think it quite clear that they do not go well with a vertical one; they confuse and weaken its effect. Repton's necessary conclusion, of course, is that Gothic buildings go with round forms of trees, because, he says, "they have a varied sky line, and hence are peculiarly suited to sites where the shape of the ground hides the lower part of the building, while its roofs are relieved by trees, whose forms contrast with those of the Gothic outline." We do not, in the present day (at least I hope very few of us), go about dropping a Grecian building on to the country here and a Gothic one there, just as fancy and the nature of the site may determine; but, in their essential meaning, these remarks, if true, are as true now as when they were written. Further on we find sentiments on the subject of combination of the house with landscape, which are quite refreshing: "When the lawns, the woods, and the water, and the general face of the surrounding country, are on so extensive a scale, the only means of preserving the same characteristics is by extending the plan of the house also; and how can this be affected unless we adopt the Gothic style of architecture? In Grecian or modern buildings it has been considered an essential part of the plan to conceal all the subordinate appendages of the mansion. Gothic enables us to use these in extending the design." Now, though Repton's notion of Gothic would probably horrify most of us, yet there is excellent sense and true perception of architectural treatment in this. Repton illustrates this by the view of Bayham, in which he points out how the size and extent of the buildings, which are formed round a large quadrangle, are clearly traceable through the contours of the foliage, and thus the idea of largeness and extent is conveyed which could never have been obtained had the house been combined into a single block, and the offices planted out of sight. Indeed, upon this system, formerly so universal, and still practised to a great extent, of planting the offices out of sight, Repton is sarcastic, saying that he has often been required to plant trees for this purpose, which, during the lifetime of the architect and the owner, never do conceal the offices, and which, in the lives of their successors, always have to be cut down to give a free circulation of air to the buildings. One other remark is worth quoting, viz., that "no form of building, as a rule, looks so insignificant in a landscape, in proportion to its actual size, as a cube," a fact which I have had occasion to verify myself in an instance I shall mention, and which is owing to that form presenting nothing to lead the eye in any one direction of length, breadth, or height. He adds very pithily that "symmetry may make an extensive building look small; irregularity will make a small building look large." In thus referring to Repton, Mr. Statham said:—I have purposely avoided alluding to anything connected with landscape gardening, which is the main subject of his work, because my object in this paper was to speak of architecture only in its connection with natural landscape in its widest sense. But I would advise those interested in the matter to look up Repton; allowing for the difference in architectural insight and knowledge in his day, they will find a great deal that is both sensible and suggestive. He was the acknowledged authority in his own day; and one of the most amusing chapters in Jane Austen's best story, "Mansfield Park," describes a dinner-table discussion as to the beautifying of a mansion and grounds, in which "Mr. Repton" is frequently referred to as constituting the court of final appeal. The principles he advocates, and which in the main I think are correct, would lead, however, to the conclusion that Greek architecture cannot well be assimilated with rounded and irregular foliage forms, which I should scarcely adopt: indeed, though I feel I am about to draw upon myself the contempt of the majority of my audience, I must confess that I never see the open colonnades in Hyde Park Gates, and the trees in the park through them, without being pleased with the effect; and here I think is again the condition of contrast of line, the symmetrical grace of the Greek "order," with the unsymmetrical grace of the living foliage. As a combination of another kind may be noted the effect of the large heavy dark forms of the Yew trees in Hampton Court gardens, with the Palace as a background. The trees might have a better architectural background (with all deference to Mr. Stevenson), but the general effect is the same, and may stand as an illustration of the combination of conical trees with a heavy mass of horizontal architecture; the cone form is not acute or strongly marked, to be sure, but the character of the foliage is spiky, not rounded. The question as to the character of trees which ally themselves best with a building depends, however, very much on whether we consider it in regard to natural scenery, or to the formation of an artificial garden effect. In the latter case the trees are planted in some more or less symmetrical relation to the building, becoming really a portion of the architectural effect; and, perhaps, Hampton Court comes more under this category.

The Sea Side.

If we consider architecture in its relation to the sea and to sea-coast effect, there cannot be a shadow of a doubt to what form of expression in building the aim of the architect should be directed. The sea is always associated with ideas of power, grandeur, or of as desolating fury of the elements; and in many of the finest coast scenes the facts tally with the associations, for a considerable part of the year at least. The whole expression of a building to face the sea should be one of stern power and solidity. It should have the air of being rooted and buttressed in the rock, beyond all fear of being shaken or threatened by the invasion of the wind and waves. To my thinking the architect could hardly have a commission more calculated to stimulate his enthusiasm for the poetical side of his profession than the command to place upon a site overlooking the open ocean a building which should be in keeping with such a position. All the grander and more monumental effects of architecture, which modern life seldom gives occasion for, and even scorns at involving useless expenditure, are here not only permissible to him, but are actually the indispensable elements of success in his undertaking. He has a right by the very conditions of the problem, to be liberal in the thickness and massiveness of his masonry, to discard all prettiness and trivial ornamentation, to reduce the area of his window openings, to give to his walls that broad expanse of solid stone which shall seem as impervious to all buffetings of the wind as is the rock itself; he has to realise the fine line of the Poet Laureate, where he likens one of his heroes to a tower—

That stood four-square to all the winds that blow.

It is vexations to think that (partly owing, I suppose, to the nomadic or intermittent nature of seaside populations) seaside architecture in general is marked by so exactly the reverse of the characteristics I have endeavoured to describe—that seaside houses are commonly the type of all that is sham and rickety. No architectural object plays so important a part in landscape as a tower. In a flat country it is invaluable as an addition to the landscape; but it is also not ineffective in the neighbourhood of hills, provided they are not so near or on so large a scale as to dwarf it. Turner, in his Salisbury, gives great effect to the spire by taking a view which causes it just to break the line of the hill behind—evidently with intention; and in his remarkably effective view of Harfleur, the great spire, white in the light, is rather aided in effect than otherwise by the sloping lines of the hill to the right. These and other instances in Turner would suggest that under such conditions a tower and spire should be so placed that from the best point for a view of them they should appear to overtop the hills and break upon the sky. In speaking of towers, it may be noticed that Claude, in his architectural subjects, almost always places in some part of his picture a plain heavy round tower as a kind of foil or contrast to his columnar or renaissance architecture. Turner seeks for contrast in his tower subjects, but he seeks for it in light and shadow; and where he has two objects of this kind of about the same size and importance, he always puts one of them in light and the other in shadow. Since it became my fortune to live almost, I may say, under the towers of Westminster, I have been constantly struck with the beauty of this effect. These two towers at either end of Westminster Palace seem to have all kinds of expressions as different lights fall on them; and you may step out to find the Victoria Tower clad in purple and fine gold, resplendent and glowing, while the clock tower wears an almost threatening aspect; turn a moment after, and behold the scene is changed, and the clock tower is all glitter, and its prouder neighbour has relapsed into gloom. If, then, the aspiring architect has the rare good fortune of having to erect anything large enough to have two towers, keep them sufficiently apart to afford room for this varied play of heaven's light upon them, this constant poetry of architectural expression. I cannot quit this subject without remarking on the interest and charm of the various views of the Victoria Tower which you get coming down the Thames from Putney or Chelsea. It is worth while to go a little way up the river to watch the effect of this tower as you come down again, and the varied aspects and perspective positions which it assumes. Few things in architectural effect are more striking than the use made of towers in the mediæval French chateau, where the dwelling part of the chateau is placed on a high rock or plateau, and the tower seems to plant a foot on the ground below, as if as a sentinel. Any one who examined the French Commission drawings in the International Exhibition must have been struck with the prevalence of this arrangement, and its remarkable effect upon architectural expression on plan as well as on construction. Turner was evidently taken with it, as his view of Chateau d'Amboise indicates. The part which buildings play in giving scale to the distance in a landscape is very important, and if the architect has any regard for the effect of his building on the scenery, he should endeavour to give it an

outline and proportion which will harmonise with the scale of the landscape, and to place it so as to afford an opportunity for assisting perspective effect. An instance of the value of a building in regard to this latter point is seen in a study of Claude, where the small building on the distant plain, evidently, from its outline, a building of the same class and size as that near the foreground, contributes largely towards increasing the scale and effect of the distance. The question of colour and tone is important, too, in its effect in connection with landscape. In the course of the expedition of this society into Northamptonshire, when I was a somewhat indolent member of the party, we visited a place called West Deeping, where there was a quiet old brown stone church of not very remarkable interest. At all events, it did not tempt me into sketching, and I strolled round to look into the water rushing through the milldam, and in so doing opened out a view of a brand new parsonage behind the old church, all red, black, and yellow brick, tuck-pointed, and everything proper. I did not get over the shock for some time, and perhaps you will feel as unkindly towards the brick parsonage as I did when I say that it first suggested this paper. This part of the subject, however, is far too extensive to go into at the close of a paper, but I think a general means of avoiding harsh and crude effects is to aim at employing, as much as possible, the building materials of the district, because these are what form the basis of the tone of the landscape, and though any new building looks raw and crude at first in the landscape, it will, if built of a material indigenous to the district, very soon begin to assume a harmonising tone. Not, however, that I would by any means speak slightly of brick as a picturesque material, but I confess to an absolute hatred of the buff or yellow brick. It harmonises with nothing; it is gaudy when new, and insipid and useless when weather-worn. But a rich-toned, not too bright, red brick looks very well in combination, especially with a wooded country. I noticed an observation in Repton (if I may refer to him once more) that a large red house is not displeasing, though he seems to think a small one is. I was struck with this, having observed in the architectural room of the Academy the last two or three years a tendency towards large red houses, and one I remember very well, though I forget the architect, where the red tone was carried in an almost uniform tint over the roofs also by means of tiles; the site was well wooded, close up to the house, and the effect, as shown in the water-colour drawing, was exceedingly pleasing. As to small houses, most of us remember the "red house" at Northampton. There is something, also, to be said for white in a landscape where grace rather than richness is the prevailing character. You will, perhaps, think I am naming rather a trivial instance, but in walking up St. James's Park, on some recent autumn mornings, I have been much pleased by the effect of the long white front of Carlton Terrace glittering in the sunlight, and seen through a network of thinly-clad trees. It would be pleasanter to think it was marble, no doubt; but let "Compo." have a good word for once. This kind of combination of white building with a screen of trees was liked by Turner, who has given a fine instance of it in his imaginary scene, called "The Garden of Boccaccio," in the National Gallery. There is one other point on which I should wish to raise a question, and that is in regard to a very prevalent and increasing disposition on the part of some of the ablest members of our profession, who, again, are imitated by their juniors, towards what can only be described as more or less a "rustic style" for large country houses. Some of the compositions of this kind, seen from time to time in exhibitions and in the illustrations of the architectural journals, are so picturesque in themselves, and are in the best instances set forth by such capital and artistically effective drawing, that the judgment is disarmed on looking at them. Yet it is open to serious question whether this is, after all, the thing. In the first place it may be doubted whether the comparative refinement and culture of modern life, regarding which there is now little real distinction between the country and the town, meets with the best architectural expression in a building conveying the impression of being a group of cottages thrown together into a house, with a turret added as a leading feature; then, as to the connection of the house with the landscape; I used the word "picturesque" in regard to this style of house, and it is so, but it seems to aim at including all the picturesque within itself and presenting, one might almost say, the aspect of landscape and house in one.

Certificated Fruits and Vegetables.—The following received first-class certificates at Chiswick and South Kensington this year, viz.—*Beans*: Carter's Mammoth Long-pod, Carter and Co.; Seville Long-pod, Vilmorin et Co.—*Potatoes*: Barron's Perfection and Early Dimmick, Farquhar; Bountiful, Fenn; Cattell's Eclipse, Cattell; Dwarf White, Bliss and Sons.—*Tomato*: Carter's Greengage, Carter and Co.—*Grapes*: Mrs. Pearson, Pearson; Venn's

Seedling, Sweeting.—*Musa*: Champa, Woodbridge.—*Pears*: Beurré de L'Assomption, R. H. S. Chiswick; Lucy Grieve, Grieve; Pitmaston Duchesse d'Angoulême, Kemp.

THE HOUSEHOLD.

Boiling Fruit in a Copper Kettle.—In preparing Apple butter in a copper kettle, where fresh cider is boiled down and thickened by adding sweet Apples cut in slices, and the whole kept on the fire for thirty-six to forty-eight hours, would the danger of poisoning be certain, and how would it show itself with the persons partaking of it?—JUB. A. [Answer by Prof. S. W. Johnson, in the *Tribune*: Acids like those in fruits as well as vinegar do not act on metallic copper, except with co-operation of the oxygen of the air. Therefore, Apple juice or vinegar may be boiled in clear copper kettles without danger of dissolving the metal, for the escaping steam excludes the air; but in the process of heating up and of cooling down in open vessels some copper will go into solution. If the process is quickly and skilfully conducted, so little copper will pass into the Apple butter as not to damage it or make its consumption unhealthy. But if the Apple juice slowly simmers for forty-eight hours, the quantity of copper dissolved might be highly injurious. Acute copper poisoning, following the ingestion of considerable quantities of soluble copper compounds, but not enough to produce speedy vomiting, occasions severe inflammation of the stomach, intestines, and liver, with vomiting, spitting, and bloody diarrhoea, also constant headache, yellow complexion, cramps, lameness, and staggering. Chronic copper poisoning is followed by the same symptoms, in milder forms, with weakness of the limbs, pallor, and waste of flesh. It is not improbable that weak, dyspeptic persons have these evils aggravated, and suffer severely from swallowing small amounts of copper that are totally harmless to strong and healthy people. The use of vessels of copper for cooking, of plated, lead-soldered tins, for canning acid fruits, of lead pipes for siphons, &c., in making vinegar, and for water service, occasions, in careless hands, an immense amount of suffering in the way of chronic poisoning.]

Apples.—With most of us the value of the Apple as an article of food is greatly underrated. Besides containing a large amount of sugar, mucilage, and other nutritive matter, Apples contain vegetable acids, aromatic qualities, &c., which act powerfully in the capacity of refrigerants, tonics, antiseptics, and, freely used at the season of mellow ripeness, prevent debility and indigestion, averting, without doubt, many of the "ills which flesh is heir to." The operatives of Cornwall consider ripe Apples nearly as nourishing as bread, and far more so than Potatoes. In the year 1801—which was a year of much scarcity—Apples, instead of being converted into cider, were sold to the poor; and the labourers asserted that they could "stand their work" on baked Apples without meat, whereas Potato diet required the addition of meat or other substantial nutriment. The French and Germans use Apples extensively. The labourers depend upon them as an article of food, and frequently make a dinner of sliced Apples and bread. There is no food cooked in so many different ways in our country as Apples, nor is there any fruit the value of which, as an article of nutriment, is so great and yet so little appreciated.

Potatoes Soufflés.—Those delicious blistered Potatoes are rarely or never seen on English tables. The Potatoes, if small, are simply cut in halves; if large, cut into three or more slices; these are fried in the usual way, but are taken out before they are quite done, and set aside to get quite cold; when wanted they are fried a second time, but only until they are of a light golden colour, not brown.

Lemon Butter for Tarts is made by using 1 lb. of pulverised white sugar, the whites of six eggs and yolks of two, together with three Lemons, including grated rind and juice; cook twenty minutes over a slow fire, stirring it constantly. Thus treated, it is excellent.

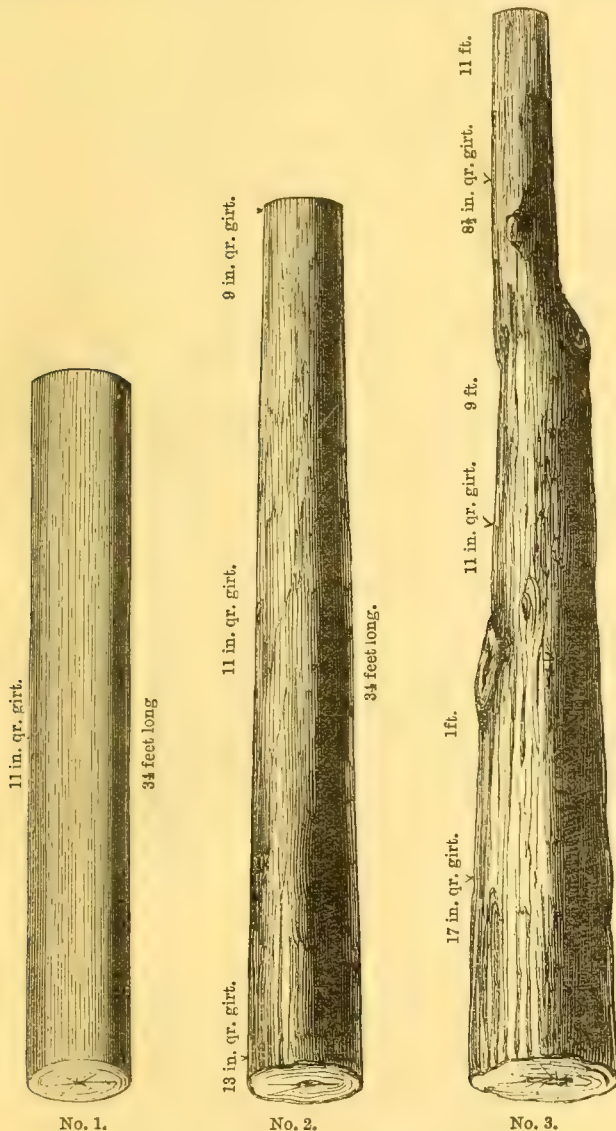
Potatoes Sautees.—These are even more agreeable with meat than fried Potatoes. Cold boiled Potatoes are sliced up, and tossed up in a saucepan with butter, mixed with a little chopped Parsley, till they are lightly browned. Pure goose or other dripping is by many cooks preferred to butter for this purpose. The acmé of delicacy in the cooking of Potatoes is achieved in what is called

Puree of Potatoes.—This only differs from English mashed Potatoes in the employment of more milk and butter, and in the whole being carefully reduced to a perfectly smooth thick cream-like mixture. Where economy is a great object, and where rich dishes are not desired, the following is an admirable mode of mashing Potatoes. Boil them till thoroughly done, having added a handful of salt to the water, then dry them well, and with two forks placed back to back, beat the whole up till no lumps are left. If done rapidly, Potatoes thus cooked are extremely light and digestible.

THE LIBRARY.

THE COMPLETE MEASURER.*

This concise manual, consisting of 380 pages, is one likely to prove useful to gardeners and others having occasion to measure either timber, stone, or other building and fencing materials. It is arranged on the ready-reckoner principle, so that all trouble in working out a series of intricate rules is saved. Not only are the best methods of measurement shown, and in some instances illustrated by means of wood-cuts, but the erroneous systems pursued by dishonest dealers are fully exposed. Taken as a whole, the work must be considered to



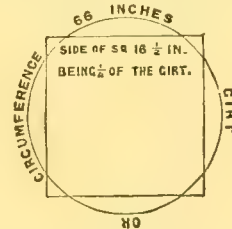
be a valuable addition to every gardener's library. The following extracts and illustrations will serve to show what may be expected to be found in such parts of the work as are not tabular:

To take the dimensions of a round tree or any similar body, measure its length in feet by a rod, tape, or carpenter's rule, and then take its circumference in the middle with a piece of common whipcord, doubling the cord into four equal parts, and so apply it to the carpenter's rule, to learn the quarter girt in inches with any fractional quarter or quarters of an inch that there may be. Or the circumference of the tree may be taken with a narrow, non-elastic painted tape having spaces of four inches marked upon it, each space

being numbered in successive rotation as girting inches, and every such space subdivided into four equal parts by a partial mark on the tape, to answer as quarters of inches. A purchaser will prefer using the whipcord, unless at the commencement of the tape $\frac{3}{4}$ of an inch is given in the measurement as an equivalent to him for the accustomed advantage obtained by the doubling of the whip-cord to apply to the carpenter's rule to find the quarter girt of the tree. The tape when passed round the tree shows its quarter girt forthwith. These directions for taking the dimensions of a tree or pillar is under the consideration of its size being the same throughout, as instanced by the diagram No. 1; or of the tree or column tapering regularly from one end to the other, after the manner of the diagram No. 2. But when the size of a tree is not regular its whole length, in consequence of sudden variations in its circumference, each part or length of it so varying in girt must be measured separately, in conformity with the subjoined diagram, No. 3, and then the contents of the different parts added together. Having obtained the length and the quarter girt as directed, we refer to the top of the table for such quarter girt, and beneath it, opposite to the length of the tree found in the outward columns of the page, is shown the solid contents of the tree, or portion of the tree as may be.

Length. Feet.	Quarter Girt. Inches.	Solidity. Feet.
14	17	35 1/2
9	11	9 1/2
11	8 1/2	7
		52

If the improbability ever should arise that the length or the quarter girt of a tree should exceed the limits of this table, the same method of ascertaining the quantity of the tree may be resorted to here as was pursued in the last table. Any part of a timber tree not girting 24 inches (that is 6 inches its quarter girt), is not usually considered timber, and is excluded from the measurement, unless by agreement to the contrary. To exemplify the principle upon which this round



timber table is compiled, and to represent how to acquire the true quantity of any round body, be its size what it may, as also to clearly show the construction of the square-sided timber table which Hoppus erroneously adopts for round timber, the above diagram of the transverse section of a tree with its demonstrations is extracted from my set of published calculations entitled "Underwood and other Tables."

The above circular figure, showing the transverse section of the tree, and the square figure that is substituted and computed by Hoppus in lieu of it, by considering one-fourth of the circumference of the circle sufficient for the side of a square that shall contain an equal area to the circle, fully demonstrates the fallacy of the customary method of measurement. It is obvious that the area of such a square must be much less than that of the circle, although the four sides of the one are equal to the circumference of the other. It is known that the area of a circle whose circumference is 1, is .0795, &c., upon which calculation I have computed the quantities in my table; but in this example I adopt the usual practice of substituting .08, as this deviation causes a considerable abbreviation in the calculation of the area of circles, with very little difference arising in the result.

To elucidate the tradesman's loss by Hoppus's mode of measurement, we will suppose a mason buys a square-sided piece of marble, measuring in each of its thicknesses 21 inches, and in its length 20 feet, for the purpose of making it into a circular pillar. By reference to the square-sided timber table it is seen this square piece of marble contains 61 solid feet. After converting it into as large a circular pillar as possible, it will girt 66 inches, and to obtain the solidity of it, Hoppus takes 16 1/2 inches (the quarter girt of 66 inches), and refers to the square-sided timber table, where the quantity is given at 37 1/2 feet in the round pillar, making a loss of 23 1/2 feet in the conversion of the marble from a square to a circular column. By applying to this round timber table, it appears that the true content of the circular pillar, measuring 66 inches in circumference by 20 feet long, is 48 solid feet, and for which the tradesman should charge his customer, instead of for only 37 1/2 feet, the false amount obtained from Hoppus's table. As a palliation for the extraordinary sacrifice thus made by the sellers of round timber, the

* "The Complete Measurer." By Richard Horton. Second Edition. With important additions. London: Lockwood & Co.

purchasers observe that they are entitled to an allowance for waste arising in hewing the tree. That an allowance ought to be made is unquestionable, but it should be a just one between the two parties, and to this end I would submit that the proportion of $\frac{1}{4}$ th of the solidity of round timber trees be allowed for the waste, and I here demonstrate my reason for coming to such a conclusion. Referring to the transverse section of the tree, I have its circumference before hewing 66 inches, and its side after the hewing 8·03959 inches, and I will suppose the tree to be 30 feet long.

EXAMPLE.—Required the content of a tree that measures 66 inches round and 30 feet long.

CORRECT WAY.	HOPPUS'S OR CUSTOMARY METHOD.
Inches.	Inches.
66 girt	16½ = 16 5 quarter girt
66 do.	16 5 do.
396	825
396	990
4356	165
08 { area of a circle whose cir-	272·25
cumference is 1	30 feet long
349 48	144) 816750 (56 7, say 56½ solid feet
30 feet long	720
144) 10154·40 (72 6, say 72½ solid feet	967
1008	864
374	1035
283	1008
64	27
864	
0	
Quantity by correct way of measuring	F. ct.
Quantity by customary do.	72½
Loss of timber by customary method of measuring	16

Rural Affairs.—This is the expressive title of a very interesting and well-illustrated volume containing excellent articles on farming, gardening, fruit culture, &c. It is an annual publication, issued at Albany, U.S., by the proprietors of the well-edited and in every way trustworthy *Cultivator and Country Gentleman*, which holds a very high position in the estimation of agriculturists in the United States.

PERSONAL.

Mr. GILBERT, of Burghley, has written the calendar of operations in "The Garden Almanac" for the current year.—Mr. Philip Masey is the architect and landscape gardener of the projected winter garden and aquarium at Liverpool.—Mr. Messenger, of Loughborough, is to build the new range of glass in the Glasgow Botanic Garden.—The managers of the Belfast International flower show (says the *Gardener*) have prepared and awarded to Mr. Hunter a special medal with a suitable inscription, &c., for the heaviest bunch of Grapes on record.—Mr. Lees, who has for thirty years been gardener at Tynningham, left that situation at Martinmas last, and has taken a farm and market garden in East Lothian. He served at Tynningham under three successive Earls of Haddington, and has all along been one of our very foremost cultivators of plants and fruits. Mr. Brotherston, from Argyle Lodge, Wimbledon, has succeeded to the charge of Tynningham Gardens.—Mr. Peter Barr proposes to found an anti-Pelargonium society. He refuses to subscribe to the Pelargonium society on the ground that nearly every garden is already an experimental ground for Pelargoniums.—Mr. Cannell will shortly transfer his business from Woolwich to Swanley, near the Swanley junction of the London, Chatham, and Dover railway.—We understand that Mr. Ford, lato gardener to the Duke of Manchester at Kimbolton Castle, succeeds Mr. Woodford at the Duke of Edinburgh's new residence, Eastwell Park. Mr. Burr succeeds Mr. Ford at Kimbolton.—Mr. Henderson, who for several years has had the management of Sir Henry Peck's garden at Wimbledon House, is about to leave, and Mr. Ollerhead is named as his successor.

VIRGINIA AS A GARDEN LAND.

VIRGINIA is a pleasant place, with something to remind an English eye of scenes near home. Her air is soft, her climate pure. Her fields are green, her uplands bright, her rivulets fresh. She fronts the ocean, and her ports are gay with sea-going ships. The world is open to her enterprise. Great friths indent her shores, and tidal rivers flow into her valleys. She is everywhere a water-power. A hundred sparkling rills drop down her woodland heights. Her dells

are dark with pools and lakes, her ravines musical with steps, cascades, and falls. Through every valley winds a shining stream, blessing the soil through which it flows, and carrying toward, and it may be seaward, the accumulated forest growths. But she has beauties of her own, the like of which we English only see in dreams. A ridge of appenines cuts across the country, separating the fertile Shenandoah Valley on the east from the still more fertile and enchanting Winchester Valley on the west. These appenines are called Blue Mountains, from the purple tinge, which in the twilight after sunset deepens into blue, as dark as that of either Syrian sea or Grecian sky. Virginia's sun is very bright, and in his brightness he is constant, nearly all the year. Fogs are unknown, and mists are seldom seen. This wealth of sunlight in the sky sheds wealth of colour on the landscape. Skies as clear, and streams as fresh, are found in many places; but this range of mountain woods is nowhere to be matched, I fancy, on the living earth. Fine groups of hills start here and there beyond the chain of heights; one alp called White Top Mountain, lifting its head high above the Righi and Mons Pilatus; high above the line that Snowdon would attain if she were piled on the highest peak of the Cheviot hill. These giant hills are clothed with Pine and Maple, Oak and Chestnut, almost to the crown. Their sides are all aglow—gold, orange, scarlet, crimson, russet—all the burning colours of the forest mingling in one common flame. The glory of the falling year is nowhere, I imagine, to be seen in such perfection as in these Virginian alps. Drop into this garden, and again you feel at home. This orchard is an English orchard, and these Apples, Peaches, Pears, and Plums are English fruit. Here is a Potato ridge; you pull the plant and find it is an English root. But here are other things, well known at home, though not yet grown at home. In Kent, these Grapes would be under glass. These Melons would not be seen in any English garden, except Covent Garden; and these Pippins and Lady Apples are often seen on English tables, but are grown, I fancy, on Virginian soil. Here we have Maize growing in one corner, Tobacco in a second, Peanuts and Sweet Potatoes in a third. These roots and fruits are homely things to us, yet homely in a far-off and poetic sort of way, as the Roses of Sharon and the Lilies of the Valley are familiar to our thoughts. We draw nigh to them and feel at home among them, yet we recognise a sense of difference and of separation that clothes them with a kind of charm.—H. D.

The New Horticultural Club.—In answer to numerous enquiries addressed to me privately, which indicate that others would like the same information given to them, will you kindly permit me, through your columns, to say that the only reason why more active steps have not been taken in bringing it more prominently before the general body of horticulturists, is that, so far, we have been completely baffled in our attempt to find suitable accommodation, and that we are desirous, before issuing any further statement, to be able to say that we can offer our friends the full benefit of membership. The very cordial manner in which the proposition has been welcomed by representative men in the various branches of horticulture, leads the committee to believe that when we have completed our arrangements, we shall be enabled to establish the club on a satisfactory and permanent basis.—THE SECRETARY.

OBITUARY.

It is with great regret we record the death of Mr. John Traherne Moggridge, which took place at Mentone on the 24th ultimo. Mr. Moggridge had been an invalid for a long time, and for thirteen years has passed the winter at Mentone. There, in spite of great illness and a state of weakness which almost precluded his walking a hundred yards without suffering, he managed to do much valuable work in various branches of natural history. Two excellent books—the work of his pen and pencil—for he was equally expert with both—bear testimony to his merits as an observant naturalist. Mr. Moggridge's work on "Harvesting Ants and Trap-door Spiders" is a signal exemplification, not only of the author's acuteness and accuracy of observation, but of the wide field yet unexplored in very interesting branches of natural history. We allude to them simply as evidences of good work done under the greatest difficulties. The writer was fortunate enough to meet him at Mentone last April, and to hear from his own lips much of the interesting history of those harvesting ants and trap-door spiders, the habits of which he had studied to such good effect, and to gather with him some of the flowers on the hills round favoured Mentone, the flora of which both he and his father knew so well. Personally, he was most amiable and gentle in manner, and we look back to an afternoon spent with him in collecting, in mossy turf and wet banks about Mentone, the nest of the spider (so well shown in his book) as one of the happiest ever spent in like pursuits. Mr. Moggridge was an accomplished draughtsman, and illustrated his own books. We believe all his scientific work was done since he was stricken down by severe illness.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FORCING POTATOES.

THE Potato is undoubtedly one of the most welcome of early vegetables, and a dish of young Potatoes in March or April is appreciated nearly as much as a dish of Strawberries. Both of these we have always contrived to have in quantity every Easter for the last ten years; Strawberries, of course, earlier than that; but the Potatoes I do not think worth having before the middle or end of March, unless as a novelty. I have known great pains taken to secure a dish or two before that time by growing the Potatoes in pots in hothouses, but the produce I never considered worth the time spent on it, apart from the question of space and materials. The Potato is very easily forced into growth, but unless the culture is conducted with some attention, very little crop, if any, is likely to result. Hence it is rarely forced, even in large establishments, being considered not worth the trouble on a large scale. This is a mistake, however. Apart from the gratification of having them on the table, they may be forced early in sufficient quantity to pay for the outlay in any private establishment. To do more than this, the frames must be utilised in another manner after the Potatoes are over, as I shall hereafter point out. It is perfectly hopeless attempting to force the Potato early unless the foliage can be exposed to the greatest amount of light possible, and the necessary temperature be maintained. I am not, therefore, going to recommend any haphazard plan, but one that will succeed if carried out properly. I must first say a few words about the Potato pit, which should be a brick structure, 7 feet wide and 5 feet deep at the back, and of any length required. This depth will allow of 3 feet of pit for a hot-bed of leaves, which will be necessary for the earliest crops, and half the brickwork may, of course, be below the ground level. A 3-inch hot-water pipe, taken along the back of the pit and round the front, will be ample heating power. The brick walls should be 9 inches thick, but the back wall may be "set off," within 15 inches of the top, to half a brick, which will be sufficient for the framework to rest upon; and the ledge so formed inside will be highly useful for Strawberries in pots, or bedding stuff, &c. Such pits can be built cheaply, and the sashes and excellent substantial framing can now be bought, painted and glazed with 21-oz. glass in readiness for fixing, for a little over 20s. a yard. I am describing the pits in use here for Potato forcing. They have paid themselves over and over again. After the Potatoes are over in April and May, a quantity of Tomato plants, which have been sown in February and pushed on to big plants anywhere about the Vineries, are planted in the frames and trained over the bed, a few old Pea sticks being laid under them to keep the fruit off the ground. From June till November we get enormous crops from these plants, with little or no attention. There is always a ready market for Tomatoes, and, what we do not use, fetch readily from 4d. to 6d. per pound in the nearest market, and it does not take many Tomatoes to weigh a pound. I record this fact for the benefit of those to whom the Potato frame is a question of expense. If the frames are not needed otherwise during summer, sufficient Tomatoes may be grown in them to defray all expenses. Presuming the first crop has to be ready towards the end of March, it should be planted about the end of December, and, with this object, 3 feet of leaves should be put into the pit a week or two before, and allowed to settle, after having been trodden hard when put in. It is not desirable that the bottom-heat should be above 65° or 70°; if higher than this it forces the Potatoes unduly during the dull winter months, and no tubers are formed worth speaking of. For this reason I never use a hotbed at all for the second crop—planted in February to be ready by May—and it is always the best. At that season, if the top-heat is properly maintained, sufficient heat will be imparted to the soil to promote a healthy growth; 9 inches of soil—light, loamy, spent soil, from an old Melon or Cucumber

bed will do well—should be laid on the leaves when they have settled sufficiently, or it may at once be thrown into little ridges with the hand, 7 inches deep and 18 inches apart, the ridges to run across the bed, supposing the pit to face south. The object of the ridges is to save earthing up the Potatoes, or top dressing, when they have grown, which cannot be done without abusing the tender stems. The sets are planted in the furrows so formed and barely covered at first, and after the stems have grown about a foot the ridges are levelled in about them, which can be done easily and expeditiously with the hand. The Potato, when forced, is very apt to form tubers near the surface of the soil, consequently moulding-up in some way must be done to prevent the best tubers from greening. Indeed, I have found it necessary, sometimes, to top-dress as well, where the stems were growing vigorously just when the tubers were forming. For this reason I have never forced any other kinds than *Mona's Pride* and the common *Ashleaf*; both are adapted for the purpose, as they make short tops—an important consideration in forcing. The *Royal Ashleaf* is too luxuriant a grower. I plant the first named for the earliest dishes, as it gets to a useful size soon; but the common *Ashleaf* is best for the main crop. Some advise saving seed from the earliest crops for forcing; but this is not of much consequence with crops planted in December. The Potato starts easily into leaf, after which the stem depends upon its own proper roots for sustenance, and the chief object then is to secure a quantity of good healthy foliage; weedy stems crowded thickly together will never yield decent-sized tubers. I select sound tubers, of fair size, a short time before the pit is got ready for planting, lay them closely together in a shallow box, and cover them with about $\frac{1}{2}$ inch of soil. They are started in any of the houses or pits where the temperature is about 60°, giving them scarcely any water at this stage. As soon as they have grown about an inch, or less, all the buds are rubbed clean off but one strong one, and the sets are finally planted in the bed, in the bottom of the little furrows before described, 6 inches apart, with the bud end of the sets all lying one way. They are then barely covered with soil, and planting is done; no water is given at this stage either. In this way I get twelve or thirteen sets into a row, in a pit of 6 or 7 feet wide, and I reckon confidently on each row giving, at least, one good dish of Potatoes, sufficient for a considerable party. If the single stem system is adhered to, each root should yield three or four good-sized Potatoes and some small ones. Avoid crowding the shoots. A good stout stem with a head of broad healthy leaves always indicates large tubers. I sometimes take the trouble to put a small stake to the stems, to keep them from falling down; when standing up erect to the light they receive its full benefit, and this is everything so early in the season. I have seen forced Potatoes with stems 2 or 3 feet long, lanky and soft, without a tuber above the size of a Bean at the root, and all through hard forcing and crowding. Little or no water should be given from the time they are planted till the Potatoes are fit to get in, unless it be near the pipes, where the soil is apt to get dry; the stems damp off readily if too much water is given, and, besides, the Potatoes are not good to eat. A night temperature of from 60° to 65° is quite high enough, and an abatement of 5° may be made in these figures in cold weather. On bright days it may run up to 75° or 80° with safety, but always with a free circulation of air. I do not adopt the usual practice of ventilating only at the back of the frame, as I find the plants placed there are much retarded, if not starved, by doing so, while those near the front pipes are roasted. I ventilate at the front by pulling the sashes up 2 or 3 inches, which allows the air to rush in over the front pipe, getting warmed by the contact before entering the pit, and, passing over the Potatoes, it escapes out between the glass and the wall-plate at the back. I ventilate all our frames in this way, as it ensures a more regular temperature throughout the structure, and cold draughts, such as result from opening the sashes widely at the back only, are completely avoided. When the crop is almost fit to get in, the pit should be kept dry, airy, and warm, though nothing like ripening the plants need be attempted. The object is to get good tubers fit for use as soon as possible; and, if they have been grown as here directed, rather on the dry side,

they will, when large enough, be ready for the table. For the second crop, to be fit to get in by the 1st of May, I plant in February; the treatment is the same, only that it is not necessary to use leaves for bottom-heat. By the above plan, Potatoes may be had when desired independently of the weather, but I ought to state that it is not necessary to go to the expense of building brick pits and heating apparatus to have Potatoes early. To attempt to have them as early as March or April, however, with the aid of fermenting materials alone, involves much labour and trouble, and the results are, at the best, uncertain. Still, with the simple leaf hotbed and wooden frames, they can be had a long while before the earliest outdoor crops are ready. Frames suitable for the purpose can now be bought cheaper, as a rule, than they can be made at home; they may be had, carriage paid to their destination (if within 200 miles), at exactly the same price (20s. per running yard) as the sashes for the pits before described, to which they are similar, so far as glazing, painting, and excellence of construction are concerned. Such structures are a capital investment for gardens of moderate extent, as they can be turned to almost any purpose, will last for many years with a little care, and, being portable, are, of course, the property of the tenant. For Potato forcing, such frames should be placed on a leaf-bed, and it is an excellent plan to thatch them with straw outside, which will save much trouble with linings in frosty weather. This thatching can be performed quickly by any labourer, for he has only to get a bundle of clean drawn Wheat straw, and tuck it round the outside of the frame with two or three lines of tar-band, hooking the band round a nail about every 2 feet, as he goes on, and afterwards cutting the straw square off with the knife, level with the top of the frame. In such frames the Potatoes may be planted in February, after starting as before advised, and brought on as fast as the weather and economised sun-heat will permit; or the Potatoes may be forwarded in 5-inch pots, and planted out about the 1st of March. But, when forwarded in this way, say till they are perhaps 6 inches high, they must be kept growing, by close attention to hot linings applied to the sides of the frame, or by shutting up early in the afternoon, so as to make the most of the sun-heat. Water must be given sparingly. Out of such frames we have had excellent crops of Mushrooms from spawn inserted in the soil after the Potatoes were planted; but the success of the Mushrooms depends upon the temperature of the bed being kept up to about 70°, and the sparing supply of water till the Potatoes are got, when the bed should get one or two good waterings with tepid water, which will bring the Mushrooms to the surface if they are there. As the Potato-stems get almost in contact with the glass soon after planting, and are apt to get caught by the frost, care must be taken to cover the sashes with a little of the driest of the litter at night whenever there is danger from frost. A very thin sprinkling of dry straw will keep out more frost than any kind of cloth covering, being one of the best non-conductors. Those who are desirous of making the forced and out-door crops shake hands should forward a quantity in pots or pans, and plant out in a warm south border when they are 4 inches high, about the 1st of April—always having a little dry straw handy in case of frost.

J. S. W.

DATE PLUMS.

THE recent introduction of some new Japanese varieties of Date Plum has given a new interest to the genus *Diospyros* not to be passed over. The notes which follow are the results of actual observation, and may, therefore, be worth putting on record. In the first place, we will say a few words respecting the state of the question both horticulturally and botanically. Until within the last few years there were only three species and a few varieties of *Diospyros* cultivated out-of-doors in European gardens. The commonest, *D. lotus* from the Caucasus, also called the Italian Date Plum, as it is found in a half wild condition in the Italian peninsula, is known by its pleasing habit and yellow fruit, about the size of a Cherry, upon which the thrushes and blackbirds feast in the autumn. Another species is *D. virginiana*, the Virginian Date Plum or Persimmon, as it is called in America, a much larger plant in all its parts. It has handsome shining foliage, and its round orange-yellow fruit is as large as a Green Gage Plum, and edible, though not of a

particularly good flavour. The remaining species, found in nurseries, are, in our opinion, simply varieties of this. In 1789, a third species was introduced from Japan, differing entirely from the two preceding and known in Japan as a fruit tree, under the name of Kaki (*D. Kaki*). This tree will only succeed in the Orange region, where it bears a roundish fruit, as large as a small Apricot, yellow and sugary when ripe, and known under the name of Figs caques. It is now rather widely dispersed in the south of France. We saw a fine specimen of it in Italy, in the botanic garden at Pisa, and Prof. Carnel, the director, kindly gave us some of its fruit, which has something of the taste of a thoroughly ripe Medlar, but it is more sugary. Things remained thus until about the year 1859, when the Paris Museum of Natural History received a consignment from Mr. E. Simon, in China, which contained a new species of *Diospyros*. The plant grew and flowered, and showed fruit in 1869. At first M. Carrière thought he had the true *D. Kaki*, but soon discovered his error and described the new plant as *D. costata*. Afterwards he attempted to show that the supposed *D. Kaki* cultivated in the South was really a Nepaulese species, which he proposed to call *D. Roxburghii*. In reply to this, Mr. Decaisne declared the plant named *costata* by Carrière to be no other than the *D. Schistse* of Bunge. The new tree was propagated under the name of *D. costata*. We possess a fine specimen of it at Lacroix in Touraine, where it grows vigorously, its large shining leaves resembling those of *Magnolia Soulangiana*, and its luxuriant habit rendering it highly ornamental. Its handsome orange fruit, as large as a Peach, ripens towards the end of autumn, and gives it rank as a valuable fruit tree. There are four well marked species of Date Plum which we possess in Europe at the present time. But there are also several badly-defined varieties of North American origin in cultivation. Indeed, they are scarcely worth the trouble of distinguishing, but we may roughly characterise them as follows, from an examination of the living plants in the nursery of Mr. André Leroy, at Angers. What is generally held to be the typical *D. virginiana* is a handsome tree with a spreading crown, flat, acuminate, of glabrous and shining leaves, and a nearly spherical, slightly-depressed fruit, encircled at the base by a large collar formed of the persistent calyx; and, besides this, there are the following varieties:—1. *D. v. insignis*, of very slender habit, with Willow-like foliage. 2. *D. v. pubescens*, described as a species by the botanist Pursh; but, in our opinion, a mere variety having oblong acute leaves, clothed with soft hairs beneath and borne on long petioles. 3. *D. v. angustifolia*, the same as the type, except that it has narrower leaves. 4. *D. v. villosa*, a very remarkable variety, of which the obtuse leaves recall *D. Kaki*, but its fruit is not yet known at Angers. 5. *D. v. purpurea*, a pretty variety, the leaves of which when fully developed change to a purple-red. 6. *D. v. Perquini*, a beautiful tree with acuminate, shining leaves, closely approaching what we have seen in many other nurseries under the name of *D. calycina*. 7. *D. v. lucida*, the last, which we consider the most valuable of all. It is a slender, graceful tree, with spreading cylindrical smooth ash-grey branches, medium-sized, glabrous and shining, yellow-veined leaves tapering to both ends, and supported on fine petioles. Its abundant sessile fruits are as large as a Green Gage Plum, perfectly spherical, slightly ribbed, surmounted by a cylindrical mucro, surrounded at the base by the accrescent calyx, about an inch broad, and assuming when ripe a beautiful orange colour. It contains a soft sugary pulp when ripe, recalling the flavour of Apricot marmalade and honey. We tasted it in company with Mr. Leroy, and considered it superior to the fruit of all other varieties we had previously tried. Great confusion prevails respecting the application of the names *D. intermedia*, *digyna*, and *stricta*, found in English catalogues of forty years ago, and no faith can be placed in their present use in collections. They are all the issue of *D. virginiana*. The principal object of this notice, says the *Illustration Horticole*, is to induce people to cultivate the better varieties of the Virginian Date Plum. The species was introduced nearly 250 years ago (1629), and it is scarcely known even now. *D. costata* is even superior, but it has the disadvantage of being less hardy, not being able to resist the winters of Paris; it is still very rare, and must continue so for a considerable time, whilst *D. virginiana* is scarcely touched by the frost. In America the latter is esteemed as a fruit tree, under the name of Persimmon. Its blotted fruit is eaten with or without sugar, or made into a preserve, like that of *D. Kaki* in Japan, of which we recently tasted some samples sent to the exhibition at Lyons by Mr. Hénon. It is also employed in making a kind of cider, spirit, and beer, with the addition of hops. Oven-dried they resemble the French Prunes. Were the Date Plum more widely grown in the deep cool soil of our parks and gardens in the south of England, and especially the variety *lucida*, which Mr. Leroy possesses, we should, perhaps, have another handsome tree and another good fruit.

NOTES OF THE WEEK.

— As we write, Bedford Square is undergoing a thorough over-haul. The fine old Pines stand out grandly as the dwindling, mean, under-shrub vegetation, common to Bedford, as to other west-central squares, is being swept away, root and branch, from beneath the trees that are to remain.

— AMONG Orchids to be sold at Stevens' on the 21st inst., is a new *Masdevallia*, named *M. Davisii*, in compliment to its collector, Mr. W. Davis, who discovered it in the Western Cordilleras of South America. Its bright orange flowers are both handsome and effective, and it will form a welcome addition to the scarlet, vermilion, and white-flowered kinds.

— WHITE LILAC, so popular in Parisian markets, has again made its appearance in Covent Garden. It is, as we have before stated, the common purple kind forced in darkness, by which means delicately perfumed pearly-white flowers are obtained, which are largely employed in the composition of bridal and other choice bouquets.

— THE Metropolitan Board of Works, who are now the conservators of Clapham Common, in compliance with the wishes of the residents of Clapham, have determined that the Common shall remain intact, and as an open space, free to the public. Some young trees have recently been planted by the roadside, and the Common, already studded with forest trees, will, in time, present a park-like appearance. The ponds of stagnant water are to be purified, and the Common drained, but the intention of converting it into dressed ground is abandoned.

— THE new edition of Gordon's "Pinetum" is, we understand, nearly finished, and will be published early next month. It will contain a hundred pages more than the previous edition, and will be rendered very complete as regards nomenclature, Mr. Bohn having added both English and popular names as well as those under which the different species are known, not only in Japan and China, but also in Germany, France, and Russia. The book is thus fortunate in having both author and publisher fully acquainted with the subject on which it treats.

— MESSRS. ELLWANGER & BARRY, of the Mount Hope Nurseries, Rochester, New York, write to us as follows respecting their finer kinds of Pears and Apples:—This season our finest late Pears ripened earlier than usual owing to the autumn being very warm and dry. The *Beurré d'Anjou* is nearly gone; we have, however, still *Beurré gris d'Hiver*, *Vicar of Winkfield*, *Lawrence*, *Winter Nelis*, and *Josephine de Malines*; the last is our best keeping fine melting Pear. As regards Apples, we have a great crop of *Ribstons*. We think, however, that our best winter Apple in Western New York is the *Northern Spy*. In the winter of 1848-49, when it was yet new, we presented it to our friends in Europe and sent a basket of it to the Queen. The *Newtown Pippin* does not succeed well here; it does better near the sea coast and southward. The *Baldwin* is the great Apple of the market orchard, for profit, all over New York and New England; next come the *Rhode Island Greening* and *Roxburg Russet*. The late Mr. Robert Thompson once told us that the two last-named were better suited to the English taste than any other American Apples. He considered the *Northern Spy* to be the finest Apple he had ever tasted.

— At a recent meeting of the Philadelphia Academy of Natural Sciences, Mr. Thomas Meehan referred to a former communication in which he exhibited specimens of *Euphorbia cordata*, or *E. humistrata*, collected by him in the Rocky Mountains, and which, normally procumbent, had assumed an erect habit on being attacked by a Fungus, *Æcidium Euphorbiæ hypericifoliae*. He now found that the common trailing *Euphorbia* of our section, *E. maculata*, when attacked by the same Fungus, assumed the same erect habit. There was an additional interest in this observation, from the fact that, with change of habit of growth there was a whole change in specific character in the direction of *E. hypericifolia*. In a comparison of the leading characters of the two species, we see that in *E. maculata* there is a profusely hairy stem, while that of *E. hypericifolia* is nearly smooth. The same is true of the fruit. The leaves of the former species are very oblique at the base, the latter nearly regular. The flowers are produced in all the axils. In the *E. hypericifolia* the stems have a tendency to be nodose at the joints, while *E. maculata* is nearly free from this character, and the flowers are mainly in heads at the end of the branches. The *E. maculata*, after the fungoid attack, becoming erect, also becomes nodose, and has the flowers on the ends of the comparatively smooth branchlets, while the leaves have lost their pointed obliquity; and, in short, all the characters make an intermediate between the two species. He said it would not be fair to assume, from these facts, that *Euphorbia hypericifolia* was an evolution from *E. maculata*, but,

as there could be no doubt that nutrition was one of the factors in the government of form, we could say that certain phrases of nutrition, brought about by an attack of a minute Fungus, would change the characters in the direction of those in that species.

— THE "Garden Almanack" will be published next week as a supplement to THE GARDEN, and will be presented gratis to subscribers.

— THIS number of THE GARDEN contains the first of a series of articles written by Mr. Thos. Baines, to meet the wants of those who cultivate their own gardens. The "Amateur's Garden" will, henceforward, find a place in our columns every week.

— It is intended to hold at Lyons, next year, an International Exhibition of Potatoes, in connection with the great meeting of the *Cercle Horticole Lyonnais*. The schedule will provide for six classes, and the "premier prix" will be a silver cup, to be awarded to the competitor who shall have produced the largest and finest crop from one tuber. The judges will consider quality and quantity as of equal importance.

— BLENNHEIM ORANGE APPLES, grown this year in an orchard at Perryfield, Godstone, Surrey, weighed, when gathered, 19 and 22 oz. each, and fifty on the same tree were each over 1 lb. Mr. Richardson, the gardener at Perryfield, informs us that the productiveness of the orchard in question is remarkable, the trees every season for twenty years being loaded with fruit, even when scarcely any exists in the neighbourhood. They are planted on a bed of clay in which there are here and there small nodules of ironstone and flint, and are top-dressed every other year with stable-dung. Provide good shelter—an important point—says Mr. Richardson, manure well, and prune every year, and plenty of fruit will be the result.

— OF Clapp's Favourite, a Pear to which we have more than once made favourable allusion, an excellent coloured illustration is given in the last number of the *Bulletin d'Arboriculture*. Sufficient attention has not, hitherto, been given to this variety on account of its being a summer Pear, but it is none the less valuable on that account. Its fruit, which is large, is of a citron-yellow colour, washed with bright red on the sunny side like the *Trout Pear*. The flesh is white, delicate, and juicy. In France, this Pear is stated to have yielded abundant crops, which were fit for gathering in the end of August and beginning of September; and it is considered there to be a good market Pear.

— HORTICULTURE is practically taught throughout France, in the primary and elementary schools. There are at present 28,000 of these schools, each of which has a garden attached to it, and is under the care of a master who can impart a knowledge of the first principles of horticulture. Even in the schools to which no garden is attached the theory of cultivation is taught; but it has recently been decided by the Minister of Public Instruction that the number of school gardens shall be largely increased, and that no one shall be appointed master of an elementary school unless he can prove himself to be capable of giving practical instruction in the culture of the soil. The advantages of this system of practical education can hardly be exaggerated.

— THE Alden process of drying fruit operates by means of an ascending current of heated air, by which a portion of the water contained is evaporated. Some of the starch is changed to sugar, and the fruit rendered sweeter in flavour. This, together with the perfect cleanliness of the process, makes the product desirable, and it readily sells at considerably higher prices than that dried in the ordinary way. According to the *Tribune*, all kinds of fruit and vegetables are susceptible to this treatment. A bushel of Apples yields 6 lbs. of evaporated fruit; a bushel of Peaches, 6 to 8 lbs.; Tomatoes, 3 lbs.; sweet Potatoes, 16 lbs.; Onions, 4 lbs.; two dozen ears of sweet corn, 1 lb., and other fruit in proportion. The process is a patent, and is not, so far as we know, in use in this country.

— M. FAIVRE has recently performed a series of experiments on the Mulberry, Hazel, and Cherry Laurel, which he considers goes far to prove the fact that the substances which supply the food of plants have an ascending motion in the bark. For this purpose he made perfect or imperfect annular incisions through the bark, or detached pieces of the bark to which buds were attached, or removed entire cylinders of bark from the trunk. The result of the experiments was that the buds always continued to develop when the communication remained uninterrupted with the lower portion of the trunk; while, when this communication was completely destroyed, the buds invariably withered away. If the bud was separated by a perfect annular incision, it withered the more slowly the greater its distance from the incision; and in these cases the starch disappeared entirely from the portions of the wood above the incision between it and the bud. When entire cylinders of bark with buds on them were removed, the buds continued to develop, and even produced branches bearing leaves.

THE INDOOR GARDEN.

ORCHIDS WITHOUT ORCHID HOUSES.

How is it that Orchids are not more generally grown? It cannot be that they are too expensive, since the rarer stove-plants and Ferns are equally as costly to purchase in the first instance; but many think that Orchids are not only difficult plants to grow satisfactorily; but, in addition, that they require houses specially constructed for them. This is an old idea which, somehow or other, originated when Orchids were first introduced into this country, and it does not seem to have been exploded. Yet, notwithstanding all that Williams, Warner, Anderson, Culley, Hill, Sorley, Bullen, and a score of other good cultivators have taught us, not only with the pen, but in their everyday practice, we have, during our visits to many of the gardens in this country, repeatedly met with Orchids growing well in stoves, greenhouses, Vineries, Pine-stoves, and even in pits and frames—indeed Mr. James Anderson used to grow his fine plants of *Masdevallia* and *Odontoglossums* in an ordinary brick pit just like so many *Pelargoniums*, and in few collections that we have seen were the plants so strong and vigorous as these. A greenhouse temperature is amply sufficient for many of the beautiful Orchids from the highlands and mountain slopes of India and the New World, but it is highly necessary that the atmosphere of the house should contain much more moisture than is in general given to ordinary greenhouse plants. We have often thought that it is for want of moisture in the air and at the root, that in Orchid culture often fails. They are essentially moisture-loving plants, and, if not amply supplied, they soon show signs of ill health, and eventually succumb. It is impossible to water *Odontoglossums*, *Disas*, *Masdevallias*, and the cool-growing Peruvian Orchids too much, summer or winter, provided that the compost in which they are potted is fresh and well-drained. This is an important fact that all growers will do well to bear in mind, as well as the necessity for inducing *Sphagnum Moss* to grow freely on the surface of the compost. Few Orchids fail to luxuriate in a compost on which this Moss grows well, and it exerts a beneficial influence by keeping the roots in a uniform state of moisture. Any low span-roof lean-to house or pit may be used as an Orchid-house with success, if heated so as to keep up a mean winter temperature of 50° , that is 45° as the minimum and 55° as the maximum temperature. Even if the temperature sinks to 40° no harm will be done, provided that a humid atmosphere is preserved. One very particular point in the culture of *Odontoglossums*, cool Orchids, *Disas*, and *Masdevallias* is, that their rest is not so decided as in the case of *Dendrobies* and *Cattleyas*. This being the case, it follows that a uniformly humid atmosphere must be maintained, together with a free supply at the root. The compost itself is a great essential in the successful cultivation of temperate Orchids, and should be of such a character as only to hold a certain quantity of moisture, no matter how much is supplied from the watering pot. To ensure this, the pots used must be clean, and at least half full of crocks as drainage. Fibrous peat and living *Sphagnum Moss*, with about one-fifth of thoroughly dried horse-droppings, make an excellent general compost for nearly all cool-growing Orchids; and sufficient coarse well-washed sand, or sandstone grit, to keep the whole in an open or porous state, must be used. The ordinary fine white sand in general use is much too fine for these plants, and should never be used if coarser materials can be obtained. Elevate the pseudo-bulbs of the plant a little above the rim of the pot, so as to allow all superfluous water to drain away freely from the base of the plant and the young growth. If these essentials are duly carried out, cool-grown Orchids will be found as amenable to culture as tender Ferns or tropical stove plants, and are, perhaps, even more beautiful and interesting, and the amateur who attempts their culture because he is fond of the plants, is sure to succeed. Select some robust-constituted, strong-growing species to commence with, such as *Cypripedium insignis*, *Dendrobium nobile*, *Odontoglossum grande*, or *O. Alexandræ*, and, if these succeed to your liking, then add others according to taste and the space at your disposal.

F. W. B.

BEGONIA FUCHSIODES.

SOME say that this *Begonia* rarely flowers well until the second year of its growth. By the following system of management, however, good blooming plants of it may be obtained the first year. About the middle of next month take off cuttings, insert them in equal parts of peat and sand, and plunge them in a good bottom-heat, with a bell-glass over them. In about three weeks they will be well rooted. Then pot them off into 5-inch pots, and place them again in a little bottom-heat, where they can have a moist atmosphere. In such a situation they will grow rapidly. Never allow them to become pot-bound. The soil I use is three parts strong maiden loam, two parts Mushroom-bed dung, and one part sand, with plenty of rough charcoal intermixed. In this they grow like Willows. By July or August we have had plants 6 feet high and 3 feet through, covered with scarlet flowers. While in their growing state the shoots should be kept pinched in, which prevents them getting too gross and woody. They push out laterals plentifully, and from August till Christmas, and even after that, they will be one mass of bloom. Up to August they may be grown in a stove, and afterwards moved to the conservatory. Some recommend stunting them in small pots to make them bloom, but that process destroys the beauty of the foliage, and causes them to produce puny flowers. The pot in which they are to flower should be about 20 inches deep by 19 inches wide, and if grown properly they will require all that room. Never allow them to want water, of which they absorb so much in summer, or they will turn yellow. Being gross feeders, you may water them with soot-water, or manure-water, in the proportion of 3 quarts to a 4 gallon can. If this is rightly followed out, you will be doubly paid for all your trouble, and that, too, during the first year. After they have done blooming, remove them to the stove, where they will soon begin to grow again; but in order to keep up a stock of fine healthy plants, I would recommend them to be struck from cuttings every year, and treated in the manner I have just described. J. R.

Tunbridge Wells.

Jalap Plants.—In THE GARDEN of December 5th, you ask if *Convolvulus Jalapa* is in cultivation in this country, and if it has been found hardy? There is a plant of it in the Botanic Gardens at Liverpool, where it has been for the last fourteen or fifteen years, growing on a bed of gravel, the roots being about the size and shape of the double Cocoa-nut. I do not think it has ever been tried in the open ground; perhaps the curator (Mr. J. Richardson), will possibly act on the suggestion, and give it a trial, and report the result in your columns. *Exogonium Purga* matured seeds with me this season for the first time; these are now in the hands of Mr. Thompson, of Ipswich, and I have no doubt that it has done so, and much more freely, in the College Botanic Gardens at Dublin, where both Mr. Ellacombe's and my own plants originally came from, nine or ten years ago. Both the *Jalap* and the *Scamony* grow luxuriantly, with me, and I originally intended to recommend their cultivation on a large scale in this country for medicinal purposes, but I find that although they grow freely, and produce, like the common Bindweed, abundance of fleshy root-stems, from which they may be readily increased, they produce but slowly the tuberous roots from which the active property is extracted, and those are very deficient in resin, compared with prime imported samples. Judging from my short experience, it would require from four to six years to fully mature a crop, and would render it impossible in this country.—J. TYERMAN, Torquay.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

***Phalenopsis grandiflora*.**—A plant of this has just opened its flowers here, one of which measures 3½ inches in breadth. The lip is 1 inch, the stalk is 2½ inches in length and is furnished with nine flower-buds. Is not this extraordinary? My gardener attributes it to the plant being suspended immediately over a tank where it is exposed to what is an almost perpetual steaming.—G. W. Cox, Mount Mount, Hendon. [A plant of this species in the Orchid house at Kew recently bore flowers equally large.]

***Vellozia corulescens*.**—I have just ascertained from Kew (where I sent the flower of the plant sent to me from Ghent as *Vellozia corulescens*) that my plant is not a *Vellozia* at all, but *Barbacenia purpurea*, a member of a family closely allied to the *Vellozia*, and indigenous to the countries from which they come. The *Barbacenia purpurea* is well figured in Paxton's "Magazine of Botany," Vol. XII., page 27, and in the *Botanical Magazine*, Vol. LIV., t. 2, 777.—W. E. GEMBLETON.

The Bull Palm in the Royal Botanic Gardens, Edinburgh.—This Palm is stated by Mr. M'Nab to be about sixty years old. It stands 36 feet high from the surface of the floor, and has a clean upright stem 14 feet in height, the circumference at the base being 5 feet 4 inches, and 3 feet at the top where the leaves begin. At present the leaves are forty in number—the side ones, including the leaf-stalk, being about 16 feet long. The head of the Palm is somewhat of a globular shape, 22 feet in diameter, and is covered with large clusters of fruit.

THE GARDEN IN THE HOUSE.

CHRISTMAS DECORATIONS.

At Christmas, decorations of some kind are, as a rule, attempted in every house; indeed, one could hardly believe it was Christmas in the absence of Holly, Ivy, and Mistletoe,

which have so long at that season occupied prominent places in our households. The custom of decorating with evergreens is far from being a modern one. The Romans, 2,000 years ago, did the same thing; indeed it is more than probable that the origin of adorning our homes with Ivy, Holly, and Bay, must be sought for in the Roman Saturnalia, held every year towards the end of December. Formerly the decorations of rooms consisted of a few branches of evergreens stuck here and there as might be convenient; but now they are of a much more complicated character, and require time and skill in their manufacture. Where decorations of any extent are annually employed, the week before Christmas is a busy time with the ladies of the household, as the making of the decorations principally falls to their share.

To make effective and pretty designs requires good taste, practice, skill, and a general knowledge of the materials to be employed. A few hints, on this subject, therefore, may prove acceptable, as I have assisted in making many decorations at Christmas time, and so can speak from experience. First come under our notice the shrubs to be selected; though Holly, Ivy, and Mistletoe are principally used, there are many other materials which may be enumerated, and which are admirably adapted to intersperse with the above so as to relieve that sameness which would occur were Holly and other ordinary Christmas evergreens only employed. Amongst others I may mention the following:—Arbutus, Aucuba, Bay, Euonymus, Gold and Silver Hollies, Ives of different colours, Laurels, Laurustinus, Portugal Laurel, Spruce and Silver Firs, Yew, &c.; also branchlets

of Arbor-vitæ, Cypress, Deodar, Juniper, Thuja, or any other ornamental shrubs obtainable. Having said so much for evergreens, let us advert to the foundations on which they are to be worked. These consist of the following, for, according to the style of decoration, so the foundation must be selected. For garlands, wire or strong cord should be used; the latter is, however, preferable, as it is not so liable to twist

as wire; and, for what are called upright wreaths or panels, fine iron rods are the best. For ornamental devices perforated zinc should be used; for letters, strong brown paper; for narrow beadings, where single leaves only are employed, tape wire; for crosses, picture frames, texts, &c., flat laths, such as are used in the construction of ceilings by plasterers, or Hazel rods; and for wreaths strong wire; for small garlands fine twine is serviceable. In addition to the above, several balls of hemp twine (fine and coarse), large needles and strong linen thread (dark green or black), a pair of scissors, penknife, and reels of binding wire, must also be at hand; and, though last on the list, one of the most important things to be supplied with is a strong pair of kid gloves to protect the hands from the scratches and cuts which

they are certain to receive if unprotected from the prickly leaves of Holly or from the binding wire. Although I recommend strong kid gloves, I do not mean them to be thick or in any way clumsy, as, if that were the case, it would be impossible to do any of the fine work, such as letters in single leaves, neatly. Having thus alluded to the different materials required, let me now direct attention to the manner in which particular designs are manufactured.

Garlands.—As has been stated, the best material for the foundation of these is strong hemp cord; a loop should be made on one end, and this slipped over a nail or hook, fastened for the purpose in a wooden table or in anything that will hold it firmly. Having a supply of evergreens at hand, cut

to the required lengths, bind them on to the cord with fine twine; one firm twist of twine will be enough to keep each bunch of evergreens in its place, and so work down the cord to whatever length may be required. A beginner will find it difficult to keep the garland even as it is being worked; but if such be found to be the case, where it is too full, the pieces can be thinned out with a pair of scissors. If it is desired to

suspend a garland of large dimensions at any height, the following shrubs will be found the best adapted for its construction, viz.:—Arbutus, Euonymus (common), Holly, Ivy, Laurel, Portugal Laurel, Spruce and Silver Firs, and Yew. For giving colour, of course scarlet berries are indispensable, and first amongst these ranks the Holly; but as the berries of the Holly are not plentiful every season, it may be well to enumerate a few others which can be substituted. There is the Arbutus, its lovely berries looking in the distance like little clusters of Siberian Crabs; and the burst seed-pods of the Gladwin, which have taken such a prominent place of late in florists' windows. The latter can be purchased in town by the bunch for a very small sum, while those who live in such counties as Devon, Somerset, and Dorset can obtain as many as they require by simply cutting them in the hedge-rows or

on the cliffs, as the Gladwin is to be met with growing plentifully in a wild state in those counties. When the berries of this plant are employed, they must be worked in with the evergreens at equal distances, as the formation of the garland is proceeded with; but the best way to arrange the Holly berries is to remove all the leaves and cut off the stems, leaving that portion only which is covered with berries;

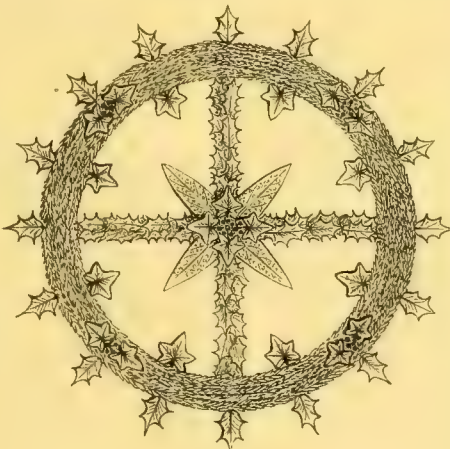
a piece of fine binding wire can then be fastened round the stem and passed round the garland, and, where fastened, hid amongst the foliage. In this manner, all the berries can be added after the garland is made. Some introduce flowers made of coloured tissue paper, but I myself prefer colour being given with berries only. Small and light-looking garlands for suspending from gas brackets, &c.,

can be made on fine twine, in a similar manner to those before described; but for this purpose very small-leaved plants should be employed, such as the Prickly Holly, variegated Box, &c.

Upright Wreaths or Beadings.—These are best made on fine iron rods, and their manufacture is very similar to that of garlands, save that the beadings are made on one face, and for binding them, reel wire should be substituted for twine. For



Ivy, Yew, Holly leaves and berries.



Yew, Ivy, Aucuba, Holly leaves and berries.



Ivy, Yew, Holly leaves and berries.

this style of decoration I like to see branchlets of the dark green Holly only employed, its rich glistening dark green leaves being relieved by large bunches of the brilliant berries fastened on with wire, as I have before described, at equal distances apart. Wreaths of very pretty appearance can be made on strong wire for hall lamps, &c., by taking a piece of wire and forming it into a circle of whatever size may be required; on this bind the evergreens with fine wire, using plenty of berries in their construction; blooms of *Laurustinus* also work in well for this purpose.

Ornamental Devices.—These should have their foundations of perforated zinc, cut out into whatever design may be selected. The foundations of the three accompanying illustrations on this subject are supposed to be so formed, otherwise it would be impossible to make them as represented in the engravings. Two of the illustrations represent devices suitable for running round the top of the wall in sitting rooms, above the picture rods, and against the cornice, or round the door frame. The third or circular design is for hanging against any blank wall, or space between pictures, &c. As will be seen in the first illustration, the half circles are formed of a double row of single Holly leaves, these are fastened on by means of a needle and strong dark green or black thread, the needle being passed up and down through the holes in the zinc. In sewing on the leaves only one long stitch in each leaf is required, and the thread should pass along the mid-rib of the leaf, as in this manner it will not be observed. The branchlets of Yew are also sewn on, but more stitches must be employed on account of the length of the branchlets. The variegated Ivy is also sewn on, but each leaf of this plant requires three stitches to keep it open and firm in its position. Indeed, everything employed in the construction of the three accompanying illustrations is fastened in this manner save the berries. The evergreens employed in the circular design are as follows:—The circle is of Yew, the Holly leaves which project are of the silver variety, the Ivy leaves on the Yew circle are also almost perfectly white, a large bunch of Holly berries being fastened in the centre of each cluster. The star is formed of leaves of *Aucuba japonica*, the centre being a tuft of white Ivy leaves with scarlet berries. All the Holly and Ivy employed in the construction of the designs here represented are of variegated varieties, as these are best adapted for placing in conjunction with Yew.

Mottoes Formed of Letters Made of Evergreens.—These are often employed amongst other styles of decoration. If of evergreens, the best leaves for this purpose are the Holly, as sharper outlines can be obtained with this than any other plant, the dark green or variegated varieties being selected according to taste. Whatever letters are required should be cut out in strong brown wrapping paper, and then the leaves sewn on these foundations; letters of white, for placing on coloured grounds, can be formed of Rice by cutting out the letters in white paper instead of brown, brushing them over with liquid gum, and then covering them with grains of Rice. Narrow beadings of single leaves are best made on black tape wire, each leaf being sewn on as before described. Beadings of this description look most effectively round door panels, &c.

Crosses.—These should be made on foundations formed of flat laths, and if these be not obtainable, Hazel rods must suffice; unless a cross be of very large dimensions, small-leaved plants should be employed as far as possible, and the lighter the colours are, if plenty of berries be used, the prettier will be the effect produced.

Picture Frames and Texts.—These can be made on laths in the same manner as crosses, but the Oxford shape when finished, will be found by far the prettiest. If the evergreens selected be of dark colours they should be relieved at each corner by a tuft of light leaves and scarlet berries. Where it is not possible to fasten these frames over those which encase the pictures, they may be suspended by a very slight wire and allowed to hang immediately over the ornamental or gilt ones.

All such decorations as I have just described may have their effect enhanced by being made to look as if frosted. This effect can be produced in the following manner. The leaves should be brushed over with gum in a liquid state, and then dusted over with glass dust from the glass works, which can be

obtained at a very small cost. A mirror draped with long tendrils and sprays of Ivy only, sprinkled with fragments of ground glass, as I have described, has a most charming effect. Many use dried flowers, such as Everlastings in these decorations, but I cannot say I admire them; if a very short supply of berries be at hand, one is sometimes forced to use artificial ones, but if anything artificial can be dispensed with so much the better. Letters can be made in rustic forms with branchlets of Yew, which, if well frosted, are most effective on a crimson or coloured groundwork of any description. As to the placing of our old friend the Mistletoe, that must be arranged according to circumstances, and as may be most convenient. In conclusion, a few remarks may be made on decorations composed of flowers. Across the back of the mantelpiece a small band of flowers may be formed on a lath, in the same manner as in the construction of crosses, save that in the place of branchlets of evergreens, Moss and flowers are substituted. The band or foundation being of green, alternate tufts of scarlet Geraniums and white Primulas look very effectively; a few Fern fronds can also be introduced if desired. Should the flowers I have named be deemed too expensive, Primroses and Violets could be used. Over the buffet a flat or one-sided bouquet could be placed—a large Arum bloom in the centre, and the rest composed of any scarlet and white or pink and white flowers that may be obtainable. I have now given descriptions of those kinds of Christmas decorations I can at the present moment remember as having seen made with an effective result. They are sufficiently numerous, at all events, to make any room look bright and suggestive of the season in honour of which it is decorated.

A. HASSARD.

ROOM PLANTS AND POT COVERS.

AMONG the many receptacles that have been named for concealing the pots of room plants, I do not observe baskets. After trying many plans, we have found nothing so good as baskets of close texture, painted, and varnished a warm brown (I believe called jappanning), a colour which detracts from nothing, and harmonises with everything, the brown earth and green vegetation being a safe example to follow. We send pots of the various sizes used to the Blind Asylum, and there the baskets are made to fit them; they have stout wooden bottoms, as the weight of the plant is too great for basket-work. When not required they fit one within another, and take up very little room. The varnish prevents the adherence of dust and dirt. Fresh Moss is laid on to cover the surface of the pots. Our large baskets for groups of plants $7\frac{1}{2}$ to 10 feet in circumference are made of open basket-work, and are lined with Moss; and here let me remark that some of the species of *Hypnum* are the best in the long run for this purpose; though there are many Mosses more beautiful, but they do not last so long. The *Hypnums* grow on dykes or loose stone walls, and also on the exposed roots and trunks of trees, and come off in fine large flakes, very suitable for linings. It seems to be generally forgotten (as also with Sea-weeds), that Mosses are complete plants, with roots and seeds, and that it is in vain to expect such species as are plucked up from among Grass, or scratched off the soil, to last long. By having two lots of the *Hypnum* it can be changed weekly, and if spread on the floor of the potting shed, and well watered, it is wonderful how revived and refreshed it becomes for the next week's use. By collecting it off stone dykes there is less danger of introducing what Cowper calls "visitors unwelcome, into scenes sacred to neatness and repose;" and the "necessary act," which "incurs no blame," is avoided of destroying centipedes, wood lice, beetles, deceptive spiders (with legs folded up and feigning death), small worms, clusters of snail's eggs, and larvæ of all sorts, which congregate under the Moss on the bark of trees. In summer, when all Mosses are, so to speak, out of season, we find a good substitute for our linings in turf; first mowing it close, and then cutting it into strips, long enough to go round the inside of the basket. The Grass grows in a couple of days, and looks very well, peeping through the basket work. If we were within reach of a hill, or "links," where fine turf was to be got, with such plants as *Polygala*, *Tormentilla*, *Thyme*, *Cistus*, *Galium*, *Euphrasia*, *Linum*, all flowering amongst it, a charming addition to the plant basket would be the result; as it is, we must be content with our roadside turf, drawing out Dandelions and Plantains, and being satisfied with a Daisy or two. Having a large stock of Saxifrages and Sedums for winter carpeting, we are using them this winter, when our supply of country Moss fails. Long sods of grey *Sedum*, and green Saxifrage mixed, and the gold-tipped *S. acre*, will, by February, be in good order for producing variety. The effect is very good, and they, like

the Grass, grow, and do not merely keep alive, as does the Moss. For room-plants in winter there are a few hardy ones which we find useful in saving stove-plants which suffer from the extremes of temperature of the room. *Carex japonica variegata*, for instance, has quite the character of *Pandanus gramineus*, or the small-leaved *Dracena gracilis*; by having it for a short time in a stove, as I saw they had at Methuen's Nursery, it acquires a delicate appearance, which, in the opinion of some, gives it an additional value. The green and variegated *Ophiopogon* and *Reineckia carnea*, are also useful, and do not suffer from a sudden fall of the thermometer. The leaves of all droop over the edge of the basket among the small-leaved *Ivies* and *Vincas*, which, to save room, we do not have in pots, but tied in Moss, when they slip into any vacant spot. *Veronica Andersonii variegata* (gold and silver), is another very ornamental plant; it, however, is impatient of the dry air of a room, and, is, therefore, more suitable as a single plant, which can be removed, and watered if need be, without burrowing in the Moss, and distributing the mixed group in a large basket. *Ficus diversifolia* I still never meet with. It is a most interesting, distinct, and invaluable room-plant for summer; we do not risk it in our cold rooms in the winter, as I fear it might cast its small yellowish fruits with which every branch is laden throughout the year; but its thick, leathery, peculiar leaves would stand as well as *F. elastica*, I have no doubt, if the plant was thoroughly hardened off. I hope to send shortly a photograph of our stock plant, in its drawing-room basket. I fancy these plain brown baskets, do not attract the eye from the plants—the first point to be considered, in my opinion, in any arrangement, either in the garden or house, or with cut flowers. To enhance the beauty of one plant by contrasting or combining its form, or colour, with others, is a safe and legitimate attempt; and we see such pleasing effects every day, in the fortunate grouping or position of trees in the landscape (too seldom by any design of the planter) down to the Mosses and Lichens, grouped on the trunks of these trees. But when man's inventions in the way of stone and lime, statuary, rockery, gold and silver vases, Majolica ware dishes, elaborate wire baskets, and glasses of fantastic forms, are attempted, then the difficulty is so great, that nine out of ten fail; and the tenth will be a very questionable success in the eyes of the true lover of plants and honest student of Nature. F. J. HOPE.

Wardie Lodge, Edinburgh.

CULTIVATION IN JAPAN.

By the Hon. HORACE CAPRON.

THE rigid adherence to the most ancient modes of cultivation in Japan, the incomparable cheapness of labour, the thorough character of the tillage, the economy and application of fertilisers, the extent and completeness of the system of irrigation (which utilises the whole water-system of the empire), and the high and continued fertility of the soil after thousands of years of successive croppings, are all of the highest interest to the cultivator. A general knowledge of the character of the soil and climate of any country is a condition which precedes an intelligent comprehension of its agriculture. Those islands of the Japanese group which are settled are situated between the parallels of 32° and 42° north latitude. Agriculture in Japan, therefore, occupies the same parallels of latitude that it does in the United States, that is, from the latitude of the capes of Florida on the south to the latitude of the British boundary on the north. The largest and most central island—Nippon—of which this article will treat chiefly, has a latitude which would give it a mild temperate climate, but there are other influences which are perhaps even more powerful than that of mere latitude. The modifying effect of surrounding bodies of water upon the climate of islands and narrow peninsulas is well understood. It renders the winters comparatively warmer and the summers cooler, as, for example, the islands of Great Britain, and the state of Michigan in the United States. So here, from the narrowness of these islands, the surrounding bodies of water equalise the temperature of every part of them. As in the case of Great Britain, there is the additional and more powerful influence of streams of thermal waters, like the Gulf Stream, which wash both the eastern and western shores of the Japanese group. This warm "river in the ocean" takes its rise under the tropical sun, far south, and runs north along both the east and west shores to their northern junction. From whatever direction the currents of air come inland they bear the warm breath of these thousand streams fresh from the Spice Islands of the Indian Ocean, through the inland valleys, over the hills and high up the mountain sides, moderating the heat of summer and tempering the cold of winter, till all the seasons become almost one perennial spring. The bluffs, hills, and mountains in every part of the islands are covered with forests of Pine, Cedar, Fir, Cypress, Beech, Birch, Maple, Oak, Bamboo, Palm, and, in fact, with every variety of tree or shrub known in the temperate and tropical climates, which meet and blend so perfectly here

that their influence upon the climate and rainfall must not be overlooked. In this connection it may be proper to say that these uncivilised people, as they are called, have adopted a policy the very converse of that followed in America and Europe in relation to these protecting coverings of Nature. The Japanese government has preserved their forests, and in fact ensured their increase. No license to cut down a tree is granted, except upon the condition that three more shall be planted and grown in its stead.

Temperature and Rainfall.

The utmost range of the mercury during the year 1873 at Yeddo (latitude of Raleigh, N. C.) was 65° F. The hottest day of the summer was 91°, and the coldest night of the winter was 26° above zero. Only two or three times did the mercury touch 32°, the point of frost. The mean temperature for the winter months is 45°, of the spring months 56°, of the summer months 75°-50, and of the autumn months 64°. The mean annual temperature, therefore, is 60°. This is a remarkable mean, when we consider that in the heat of mid-summer the mercury only rises to 90°, and in the winter seldom goes as low as the freezing point. December shows the highest temperature of the winter months, having a mean of 48°-75. January and February have had the same temperature for the past ten years, the mean of both having been 42°. The climate for these three months has, in addition to its mildness, the advantage of being dry, as the reader will see when I come to speak of the rainfall. March is 4° warmer than February, having a mean temperature of 46°. April is the first real spring month, being 12° warmer than March, and having a mean of 58°. June has a mean of 68°, and July of 78°. August maintains her universal reputation of being the hottest month by having a temperature of 81°. The extreme mildness of the winter months is best illustrated by the fact that the tillage and growth of a great variety of vegetation goes on the same as in summer, and the fields are as green as during spring. Thus comes the universal practice, unknown to our culture, of following the harvesting of one kind of crop immediately by the planting of another kind on the same ground. Cultivation has no winter of rest and inactivity here. The husbandman sows, and tills, and reaps through all the seasons, year after year, of his life. Every month has its planting-time for some kind of vegetation, and its harvest for others, generally of the simplest kinds of food-products. It is these climatic influences, together with a perfect system of irrigation, high cultivation of the soil, augmented by the application of every available material which will increase its fertility, gathered with scrupulous care and applied with a lavish hand, that enable the farmers of Japan, without foreign aid, and with half its agricultural capabilities untouched, to supply its dense population of over 33,000,000 of people. Japan has a rainfall as great, and in some localities greater, than that of Oregon and Alabama, which have by far the greatest precipitation of moisture in the United States. In Japan the annual rainfall along the seashore is 58 inches. In the interior, at the foot of the mountain ranges, the fall is much greater, in some places amounting to 75 inches. The warm months are the rainy ones. The winter has little rain, less than 2 inches per month; the spring from 10 to 15 inches of rain; the summer months from 20 to 25 inches; and the autumn months from 18 to 20 inches. Such a mild temperature through the whole year, with such a great amount of moisture, gives every portion of the empire a luxuriant growth of vegetation, unknown in the United States, except, perhaps, in the cane-brakes of Louisiana and Florida. All the valleys, bluffs, hills, and mountain sides are covered with a dense growth of tall coarse Grass. There are no barren lands. On the Hakoni range of mountains—the highest range in Japan—at an elevation of nearly 9,000 feet above the sea-level, the highest peaks grow a coarse Grass, from 3 to 4 feet high. Such an amount of vegetation, growing annually and going to decay, has formed a black vegetable soil from 4 to 8 feet deep. The whole surface of the country is uneven; there are high hills and bluffs everywhere; and lying between them there are deep and often narrow valleys.

Soil and Water.

The whole country is of volcanic origin, and, underlying this black vegetable mould, and more or less mixed with it, the whole geological formation is rich in all those saline and alkaline materials with which volcanic formation abound. The hills and bluffs are volcanic upheavals, and the deep narrow valleys were once merely arms of the sea; but in time the *débris* from the outpouring of the volcanoes, and the weathering of the formation of the upheaved bluffs and hills, gradually filled up these intervening spaces, and the waters retiring, these valleys were formed. Since that unknown time, through silent centuries, the disintegrating of the rocks and the luxuriant vegetation on the hills and bluffs have been carried into these valleys, till now the soil is in many, if not most of them, 20 to 30, and in some even 40, feet deep. From the main mountain ranges,

some of which have an average elevation of 8,000 feet, large rivers take their rise, often so wide and deep as to be navigable for miles from their mouths. The lower hills and bluffs give rise to smaller streams, which thoroughly water the whole country. Springs abound everywhere, and wells with pure cool water can be had by digging from 6 to 18 feet from the surface. With their great rainfall, three times as great as the average of the United States, and with their abundance of living streams and springs, the people have found irrigation so useful and beneficial that they have constructed a vast and universal system of irrigation by immense labour. Reservoirs have been built everywhere on the higher grounds, from which a perfect network of great and small canals radiates to all the tilled land. The system of irrigation known to us as practised by the Moors in Spain, by the Aztecs in Mexico and Peru, and by the ancients in Egypt and India, was confined to limited districts; here it is in every valley and on every hillside, and is as old as their occupation of the islands. What a lesson is there here for cultivators. With only one-third of their rain, with a country comparatively easy to irrigate, and with such an inland water system as is unknown elsewhere, we allow immeasurable volumes of water to be carried to the ocean unused year after year, while our crops fall each season far short of the possibilities of the soil, and fail almost entirely as often as every seventh year. Faulty as the Japanese land system is, in many respects it ensures thorough tillage. The title to the soil is retained by the government, and the land is leased for a term of ten years, with a privilege of renewing perpetually on the condition of thorough cultivation; failing in these conditions, the lease is cancelled and a good farmer sought for. Cultivators as a class in feudal Japan were next in rank to the "men-at-arms." They were the second class in the empire, the manufacturers, artisans, and merchants being socially far below them. Although this high rank imposed many onerous duties, it was of the greatest benefit to them. As landed gentry they had important privileges, and they were universally educated. They were able to employ the best talent to teach their children. Promotion from their class to that of the men-at-arms was not frequent but it was possible. The high rank of the farmers under this system had much to do with the high character of agriculture which grew up under the feudal rule.

Labour.

Labour is cheap and abundant in all parts of the empire. Since the opening of the ports to foreign trade, and the commencement of exportation, prices of agricultural products have been enhanced and labour has risen in proportion; especially is this true around the open ports, where the native labour has come into competition with foreign. The labourer's food is of the simplest kind, and is proportionately cheap. They eat boiled Rice, boiled Wheat, boiled Barley, and a variety of vegetables (generally Turnips) boiled and mixed with the Rice, Barley, or Wheat. They may be able to afford fish once or twice a month for a holiday-feast, but if so, it is of a cheap poor kind. It may be said that their diet is exclusively vegetable; they never eat animal food, or fowls, or eggs—yet they are always fat, stout, and hearty. They labour at all times of the year in the field, men and women together, almost, if not quite, as naked as they were born. They are muscular, active, and skilful, quiet, honest, and faithful. Little as the compensation of these labourers is, and simple and even meagre as their food may seem, they are not the over-worked and poverty-stricken class that may be found in some parts of Europe. The eight-hour system has been practised in Japan for centuries. There is an endless number of holidays also. The 1st, 6th, 11th, 16th, 21st, and 26th of each month are invariably holidays. Then the more important food crops have their harvest holiday or days, and there are religious holidays and Government holidays. All these are celebrated by gatherings in towns and villages, temples and groves. There is music, and there are brilliant decorations of flags and lanterns, and there is singing and dancing, and these labourers are jolly and happy. They sing as they dig, sow, and hoe; they sing going to toil, and they sing returning from it. Such is the soil, such the climate, and such the natural advantages of Japan for agriculture. No wonder, then, that without a foreign market for their surplus products, even without the stimulus of competitive intercourse with the world, agriculture has flourished and become the leading industry. It could not be otherwise, for nowhere on the green earth under the sun had Mother Nature been so prodigal of her choicest gifts to the husbandman. There are about 30,000,000 acres under tillage in the empire. Every inch of these 30,000,000 acres is under the most complete and thorough cultivation. If the reader has ever seen the culture of the gardens in the neighbourhood of great cities, he can have a just conception of the appearance of the farm-land in Japan. The whole cultivated portion is a garden. Two-thirds of the entire area cultivated grows both summer and winter crops. The implement that stirs the soil is either a spade

or hoe, which loosens it to the depth of from 12 to 15 inches. A rude plough is sometimes used, but it is mostly drawn by hand. The implements are the same as were in use a thousand years ago, and the modes of cultivation have remained the same through all that time.

Fruits

of some kinds are grown in all parts of the empire. The soil and climate are especially adapted to the growth of semi-tropical fruits. The former exclusiveness of Japan prevented the introduction of the better varieties. Isolated as they were, they contented themselves with half a dozen inferior varieties. Oranges, Limes, Lemons, Grapes, Persimmons, Pears, and some Blackberries, all very inferior (excepting one variety of Orange and one of Grape), were all they had. They have wonderful skill in dwarfing fruit-trees. All kinds are dwarfed without diminishing the size of the fruit. I think our fruit growers could learn much from the Japanese in this matter. I have seen acres of Pear-trees not more than 4 to 6 feet high. These trees were set out in rows, about the same distance intervening. At the height they want the trees to grow, say 4 or 6 feet, a lattice-work of small Bamboo poles is built over the whole orchard. As soon as the shoots of the Pear tree grow to this lattice, they are trained to run along it horizontally, and are confined to the poles by hempen strings. When first seen it looks like a Grapery. The wind cannot shake the trees to disturb either the flowers or the fruits. The most perfect system of training and control over the new growth is in use, so that the sap of the tree, instead of being consumed in the production of a superabundant growth of new shoots, is directed to the growth and perfection of the fruit. When the new fruits now being introduced into Japan by the Kaitakushi department are disseminated everywhere, Japan will become one of the finest fruit countries in the world. All that is wanting will then be supplied. They have soil, climate, and skill in dwarfing and training far superior to that of any other country. The same may be said of the cultivation of vegetables, which are very inferior. Of the Mulberry tree and Tea plant I shall not write, they having received full attention from others. Of grazing, I will only say that, with a population of 33,500,000 millions, there are only 300,000 horses, and 70,000 head of horned cattle, and no sheep. The grazing area on the bluffs, hill, and mountain sides of Japan, unoccupied for any other purpose, is greater than the grazing area of all the British Islands and Ireland. The attention of the Japanese government is being attracted to this important subject, and it will not be long till this great resource will be utilised.

I cannot close this article without again referring to the system of irrigation, which enables these people to realise the highest possibilities of the soil, in all seasons, with all kinds of crops. Their system of ditches is so arranged as to act as an equaliser of moisture; if it is a dry season they supply the deficiency from the reservoirs; if it is an excessively wet season they drain away the surplus moisture. It is a matter well worth all the attention we can bestow upon it. The Japanese system of fertilising is just as admirable. In the whole empire not one particle of material that can be used to fertilise the soil goes to waste; all the Grass of the bluffs and the straw of the Rice, Barley, and Wheat is saved; all the droppings on the streets and highways are carefully gathered. The refuse from the extensive fisheries is utilised, and Sea-weed is gathered in great quantities and used. In all the towns, villages, and cities the manure of the closets is entirely saved and applied to the surrounding lands. In the city of Yeddo alone millions of dollars' worth of fertilising material is saved, which, with us, would be lost to agriculture. The savings from the closets of 33,500,000 of people has an important influence upon the agriculture of Japan, and the economy of this fertilising element, which we lose in the United States, is the most important of all. The whole area of the settled portion of the Japanese Islands is not much larger than the New England States. Upon this is concentrated a population nearly as great as that of the whole United States. With thrift, economy, and skill in agriculture, but without live-stock to convert the luxuriant vegetation of the unoccupied land into manure for their tilled fields, or any system of rotation of crops supplemented, as with us, by the renovating Clovers, and unaided by mechanical appliances of any sort, the Japanese farmer produces annually from one acre of land the crops which require four seasons under their system in the United States. Thus the food of this vast population is supplied without the importation of a single article, and still not one-half of the land is under tillage. The grand secret is, drainage, irrigation, economy and application of fertilisers, and thorough tillage.

We take the above from a report of the United States Commissioner of Agriculture on Japan. It is so interesting that it leads to the desire that some competent person would supply us with a good account of the remarkable horticulture of that country.

THE FLOWER GARDEN.

THE ROSE MALLOWS.

(HIBISCUS.)

THE Hibiscus is an ornamental genus of the Mallow family, of which a hardy shrubby species (*H. syriacus*), is known in some districts as the Rose of Sharon, and a tender shrubby one as the Rose of China (*H. Rosa-sinensis*). Most of the species are herbaceous, known as Rose Mallows, and may be found in gardens in this country. Late in summer the brackish marshes along American rivers are gay with the pink Hollyhock-shaped flowers of the Swamp Rose Mallow (*H. Moscheutos*) a species which does well in gardens, and is worthy of a place there. Farther south and west, there are several other species, all showy and desirable in large gardens; one of these (*H. grandiflorus*) has rose-coloured flowers with a deep red centre, which are sometimes a foot across. The most brilliant of all is the Scarlet Rose Mallow (*H. coccineus*), a strictly Southern species, which is found in marshes from the Carolinas, southward and westward. We (*American Agriculturist*) had long known this plant from herbarium specimens, and were glad to receive this spring some roots from Florida, which enabled us to see it growing. In its native localities this forms stems 4 to 8 feet high, but ours only reached the lesser height. It is very smooth throughout, and has large long-petioled leaves, which are parted quite to the base in five divisions; the flowers, which are abundantly produced from the axils of the upper leaves, are bright scarlet, and when growing wild are 6 or 8 inches across. Our plants produced flowers scarcely more than half that size, which is probably in part due to a severe drought which was experienced, and in part to the fact that the plant does not bloom until late, and the cool nights check its development. By the time it is well in flower, it will, no doubt, be cut down by the frost, but it is so showy a plant that it is worth growing even if it can be enjoyed but a short time.

Seed Saving and Packetting.—Having, yearly, a good many seeds to save and clean, my experience induces me to add to the directions given at page 412 on seed saving, what I find an important point, viz., that the name of the seed be written with ink on the paper box. Accidents will at times happen to loose labels or slips of paper, and pencil writing rubs. If the boxes are made of a large newspaper sheet (folded so that the white margin suits for writing the name on), they will last several seasons, and a slight difference in the sizes will permit of a number going one within another, each lot being turned over on its face, thus excluding dust and industrious spiders. Often with us the same seed is put into the ready marked box of the previous season. Such small particulars save that invaluable commodity, time, not to speak of eyesight and memory. Where seeds of several colours of one plant are being saved, no eye can distinguish all the different varieties; therefore, efficient naming on the box, and at once, is imperative.—F. J. HOPE, *Wardie Lodge, Edinburgh*.

Sedum carneum variegatum.—This is a useful Sedum, well adapted for indoor decoration. It grows freely, and may either be cultivated in pots or in suspended baskets. I saw a great quantity of it the other day in baskets in the conservatory at Floors Castle. Its long variegated shoots, from 3 to 4 feet in length, hung in profusion over the sides of the baskets, and with excellent effect. In small pots it is very suitable for ornamenting the fronts of shelves,

over which it droops gracefully. It is constantly in decorative condition; the leaves are small, oblongish, and of a delicate brown and white colour. Like other Sedums it may be readily increased by means of the small side shoots, or, indeed, by a small piece from any part of the plant. A light, somewhat open, soil suits it best.—J. MUIR.

Cassia corymbosa.—This fine old plant does not appear to be so much known as it deserves to be. For training on pillars or on back walls of plant-houses or conservatories it is most useful. It commences to bloom in June, and continues in flower to the end of the year. If cuttings of it are struck in spring and grown on they will be found to be very serviceable for autumn decoration. In the flower garden this Cassia is a gem; blooming, as it does, till frost cuts it down. Some plants of it put into the open borders in June commenced to bloom in July, and only ceased when frost cut them down on the 4th of this month. The day before I might have cut three or four dozen blooms from one plant. I may add that it will bear 4° or 5° of frost without injury, and I would recommend those who have mixed borders or large beds to give it a trial.—J. C., *Tyenham*.

I would recommend those who have mixed borders or large beds to give it a trial.—J. C., *Tyenham*.

The Scarlet Barberry.—I have been much pleased with the remarks of "J. S. W." (see p. 481) on this subject; I have often admired this Barberry in the woods and flower gardens at Drumlanrig. Early in spring it is one mass of beautiful sweet-scented flowers, which soon become mingled and lost amongst pale green leaves; and, in autumn, the bright scarlet berries adorn the drooping shoots long after the autumnal tints of the foliage have passed away. Why is such an ornamental plant as this not more extensively planted in our public parks? If I recollect rightly, it is but scantily, if at all, used in any of our great London parks, and certainly I have seen it in no others. It is a plant, however, well worth a place either in public or private grounds.—J. MUIR.

Fertilising Aucubas.—Your correspondent "W. N." (p. 525) states, that the male and female organs almost always attain their perfect development at the same time, when both organs are found in the same flower. Now, although flowers in which the sexes are thus simultaneously developed are by no means invariably self-fertilised, the phenomena of dichogamy, heteracmy, or successive development of the sexes are tolerably general among plants morphologically hermaphrodite. Of course, in these cases self-fertilisation is as impossible as in monæcious or dioecious flowers. These forms are classified as protogynous or protandrous, according

as the female or the male organs are first developed. Examples of the first are *Potentilla anserina*, *Plantago lanceolata*, and *Luzula campestris*—of the latter, *Campanula*, *Pelargonium*, *Malva sylvestris*, *Parnassia*, and nearly the whole of the important orders, *Caryophyllaceæ* and *Compositæ*. Simultaneous development cannot, therefore, be said to be "almost always the case."—G. S. BOULGER, 8, *Westbury Road, Harrow Road*.

Removal of Climbing Roses.—Is it possible to move old climbing Roses without destroying them? If so, which is the best way—i. e., is it better to try to move as much of the roots as possible, or ought they to be cut? Also ought the Rose bushes themselves to be cut down, and, if so, how low?—Q. [The removal of climbing Roses that have been standing a long time in one place is difficult, and not often successful, young plants often becoming effective before the old ones have recovered. If attempted, let the removal be done in the first week in November. All good roots should be left, removing only the bruised portions, but taking away all upward-tending suckers. Stake securely after planting, that the wind may not loosen and move the plants, and cut away all unripe wood; leave all the rest until spring; then cut away the dead wood.]



The Scarlet Rose Mallow (*Hibiscus coccineus*).

THE FRUIT GARDEN.

THE GRAPE VINE.

Propagation and Planting.

THE presence of such a scourge in this country as the *Phylloxera vastatrix*, with which it is almost hopeless to contend when once it has established itself in a Vinery, makes it more important than formerly that every Grape grower should raise his own Vines. Were this practice generally adopted, the spread of the disease would doubtless be greatly checked. In those places where it has broken out most destructively, it has pretty clearly been traced to the nursery, or other establishment, from which the Vines have been obtained. Considering, therefore, how great the risk is, and how easily and cheaply the Vine may be propagated at home, I would recommend the practice of planting young Vines from eyes the first year, wherever possible. I have seldom adopted any other plan, and I have always found such plants make just as good cane as one-year old plants, which would probably cost 10s. 6d. each at the nursery. There are two methods of raising plants from eyes. Hitherto the usual plan has been to insert the eyes in small pots filled with soil, from which they are afterwards shifted into larger pots as the plants grow, and eventually planted out in the border. The other, and better plan, is to strike the eyes on small turves, which are afterwards transferred to pots or the border when the plants have grown a little. By this plan the Vine may be said to be planted as soon as the eye is put in, for from that time it receives no check whatever, which is the whole secret of the matter; and any healthy Vine eye so planted ought to make a vigorous cane the first year, unless prevented by accident. During the last ten years I have propagated hundreds of Vines in this way for potting and planting, without failure in any instance. Besides, a hundred Vines may be raised just as easily as a dozen, and as many supernumeraries as can be accommodated may be planted for fruiting the first year; whereas, had such to be bought they would cost a considerable sum of money. When the plants are struck and grown on in pots till the planting stage, they receive a check every time they are shifted, let the operation be ever so carefully performed; this arrests the growth at a very critical period; and the chances are that failures will be the result, so far as getting a good cane the first year is concerned. Besides, pot plants often and unavoidably suffer from neglect in watering, which has a stunting effect upon them, leading to premature ripening at the neck, from which they do not recover the same year. An uninterrupted growth from the beginning is the secret of raising young Vines from eyes; and this is secured most certainly and easily by the turf system.

Propagating.

The *modus operandi* is very simple. I first of all secure shoots for eyes from the best ripened Vines, always preferring short-jointed lateral shoots to leading ones. These are generally taken off in November or December, when the Vines are pruned, labelled, and laid in soil by the heels in a cool-house till wanted in spring, taking care they do not get parched for want of water at any time. During the interval a small quantity of light, tough, fibry turf, free from wire-worm, is procured and stored in a heap in order to kill the Grass roots before using it, as these grow and are troublesome when the turf is used fresh; otherwise they do no harm. When the time arrives for planting the eyes in February, or early in March, the best turf is selected, and cut into pieces 6 or 7 inches square and 2 inches deep, a hole large enough to bury a small Walnut in the centre of each piece being scooped out at the same time. The sods are then arranged closely together in a square, on a temporary platform of boards, or on the floor, where they can receive a bottom-heat of 70° or 75°, and where the atmospheric temperature ranges from 65° by night to 80° by day, with plenty of light and sufficient ventilation when required. At this stage, also, if any danger is apprehended from wire-worm, I give the sods a good soaking with boiling water, which generally settles such vermin and kills the weeds as well. I then prepare the eyes, by cutting them out with a secateur, half an inch above and below the

bud, and taking a slice off behind each with a sharp knife nearly into the pith. A single eye is then planted in each turf, and covered over slightly with finely-sifted light soil; the crevices between the turves are also filled up, and covered over on the top with just sufficient soil to hide them; then leave an even surface for watering, and the operation is finished. I may here state that I have started Vine eyes in a considerably lower temperature than is here recommended; but, like cuttings generally, they require a rather high temperature to start them successfully at first, as the vitality is apt to flag, and the buds to perish, under a temperature that would be quite sufficient to bring the buds into leaf were they still upon the Vine. I, therefore, recommend the above temperature as safe and quite high enough. The only attention the eyes will require after planting in the sods will be occasional watering. A sprinkling with tepid water is generally enough, for the sods retain their moisture for a long time. When the eyes break, and have made a few fully-developed leaves, the turves should be examined; and if the roots are found to be pushing out at the sides, they must be re-arranged more thinly—say 18 inches or 2 feet apart each way, and the intervening spaces filled up as before, with fine soil, to the depth of the turves. The night temperature should also be raised at the same time to 68° or 70°, and the day temperature should range by day from 75° to 85°, according to the weather. At this stage it will also be seen which plants are likely to be the most vigorous; and if more eyes have been planted at first than are required, the weakest may be discarded to save space, and only a few more than will be wanted, retained in case of accidents. From this time the plants will grow rapidly, and the young rootlets will soon be ramifying in all directions in the fine soil which surrounds the turves; and the advantages of such a rooting medium will be discovered when the Vines come to be planted in the border.

Planting.

If all has gone well, the plants will require to be transferred to the border four or five weeks after they have been re-arranged, as, by that time, the roots will be encroaching upon each other. Presuming the inside border has been prepared, the position of each Vine should be marked off, and the site smoothed with an iron rake. The permanent Vines should be planted along the front of the Vinery, 5 feet apart, to allow of two rods to each Vine eventually; and between them should be planted supernumeraries, for fruiting the following year, or longer if required. This will leave the plants 2½ feet asunder. In addition to these, another row, consisting of supernumeraries entirely, should be planted along the middle of the border 2½ feet apart, so that they will just catch the wires where the front supernumeraries are stopped, as will hereafter be directed. In this way nearly the entire roof is covered with bearing wood the first year, and a heavy crop of Grapes is secured the year after planting, without interfering with the permanent Vines. I am here supposing the Vinery planted to be a "lean-to," but a span-roof would be planted in the same manner, only double the number of Vines would be required. Should a dull day not happen opportunely for planting, it should be done in the evening after the house is shut up. The soil about the plants should be allowed to get dry a day or two before, in order that the turves with the roots hanging to them may lift without injury, and when all is ready each sod should be lifted with the hand, and the roots pulled away steadily from the light soil, which, being dry and shallow, will offer no obstruction; and all the roots will come away easily without the loss of a spongicle. Presuming the plants have been prepared near the house where they are required it is better to carry them in the hand, as they are lifted, to the place where they are to be planted; and as one man deposits each turf on the border in its place, another covers the roots over with a little soil. After all are planted they should be watered with tepid water, and each Vine must be supported with a small stake until it reaches the wires. In this way I have planted some scores of Vines in half an hour, and so little was the check they experienced, that I have never had to shade the plants afterwards; whereas, had the plants been transferred from pots, and had the roots to be disentangled and spread out, shading and nursing for some time afterwards would have been indispensable. In recommending the above plan of raising and planting young

Vines, it is, of course, presumed that an inside border has been prepared for them, if only a strip sufficient to allow of planting inside the house. When the border is all outside, and the Vines have to be brought through holes in the front wall, one-year-old plants are to be preferred for planting. When I have had to operate with these, I have generally raised the Vines the year previous by the turf system, transferring the turves to 12-inch pots after the eyes were struck, and growing them on without bottom-heat, and well exposed to the light during the summer, and planting them the following spring. Those who cannot raise their own Vines must, of course, buy them from the nursery or elsewhere, and they should see that they are free from disease, true to name, and well ripened, by selecting their own plants at some respectable nursery. Nearly all nurserymen sell Vines, but all do not grow their own stock, but contract with private growers or others to grow the plants for them; and, as it is merely a commercial speculation, the plants are as often as otherwise grown in bottom-heat, or under the shade of other trees, and turned out in autumn, in a partially ripened condition, to the nurseryman, who places them out of doors, exposed to all weathers, till the leaves fall off, or until he can find accommodation for them under glass. The effects of this treatment upon ill-ripened Vines with soft tender roots are simply disastrous, and such plants are unfit for any purpose, though thousands are sold every year for fruiting and planting. If the intending planter will, however, buy his own Vines from the raiser in autumn, and winter them himself in a cool house, he is not likely to be victimised. Some prefer planting when the canes are ripe in autumn, just before the leaves are shed, in order that the plants may get partially established and be ready for a start in spring; but the advantages in this respect are hardly appreciable, and as autumn planting necessitates the making up of the border before winter sets in, the soil gets soddened, and the fibre of the turf decayed long before growth commences. It is, therefore, better to defer planting till March. The canes should be cut down to within about 2 or 3 feet of the pot six weeks before planting. This length of cane will be required to reach the bottom wire to which the cane is tied after it is planted. When the border is ready, and the soil has subsided, which it always does in newly-formed borders, a semi-circular hole about 3 feet wide and 6 inches deep must be taken out opposite each of the holes in the front wall, through which the Vines are to be taken. The Vines should then be shaken thoroughly out of the pot, and the roots carefully combed out with the hand. The point of the cane is then pushed through the hole in the wall, and while one person inside ties it securely to the wire, another spreads the roots out with a radius on the bottom of the hole, covers them with soil, and waters them. No part of the cane should be buried, as is often done, in the erroneous belief that extra roots are formed, whereas nothing of the kind takes place, as I have proved conclusively over and over again. True, roots will be emitted from the part buried, but it will only be at the expense of the natural and proper roots of the Vine. I have often taken up Vines so planted in the border, and in pots, at the end of the first season, to be certain on the point, and have invariably found that while the cane had struck afresh at the buried part, the natural roots had scarcely moved at all, but remained almost in the same condition in which they were planted, whereas those that were not buried made the best roots, started into growth soonest, and made the strongest canes. After the Vines are planted, the border where the roots are, and for a few feet farther out, should be covered with 15 inches of litter and leaves, which will afford a gentle heat to the roots, and greatly promote success.

J. S.

(To be continued.)

TESTING GRAPES.

THE remarks of Mr. Ingram on this subject are highly interesting. Descriptions of this kind cannot fail to be instructive, especially to those who may be contemplating the introduction of any of the varieties into their Vineries; few people care to plant out any kind of Vine extensively which they have remotely heard of by name only. When explicit and elaborate observations on their various

Characters and peculiarities are publicly pointed out, then the selecting of sorts to suit the requirements of all is no difficult matter, even with those who had been previously ignorant about Vines. With this end in view I would like to supplement Mr. Ingram's paper with some notes of mine which I have derived from tasting the fruits at many different places and daily seeing the Vines growing for many years. These include both new and old; and, probably, I cannot begin with a more fitting object than the old and useful

Black Hamburgh, which, for all ends and purposes, never fails. If it does not keep so late as some other sorts, it is better adapted for early forcing, and may be had in that way before any other. It is generally grown to come in about midsummer, and used from then until autumn; but it will keep to the new year, and early ones have been obtained at that time. As an amateur's Grape it stands pre-eminent; it is easily managed at all times; it will either grow in a hothouse or in a cool greenhouse; it can always be depended on for fruiting from one to a hundred years old, and it is as well adapted for pot culture as otherwise. Like all varieties, there is a possibility of overcropping it, when imperfections in some form or other follow; otherwise, it may be said to enjoy immunity from the various debilities to which most varieties are subject. It is a Vine which no one will ever make a mistake in planting, either by itself or with any other variety with which I am acquainted.

Duke of Buccleuch.—This is the nearest approach to the last mentioned that has yet been produced. Where the Hamburgh succeeds this will not fail. They are so alike in their requirements and adaptations that the remarks on the former are equally applicable to this. It is three weeks or a month earlier than the Hamburgh, and the berries are double the size. It sets and swells very freely, and the fruit keeps long after it is ripe. It grows very freely, forming strong canes in one season and bearing a superb crop of fruit the next. It is a variety which has justly been awarded a considerable amount of patronage since its introduction; but it is not yet so extensively planted as its merits deserve.

Gros Colman.—In size of berry this fine looking fruit is nearly as large as the Duke. It is a free grower, free setter and swells well. It must not be over-cropped or grown in too cool a temperature, or it does not colour well. It is of Continental origin, and one of the finest Grapes which has ever been imported into this country. It can easily be had ripe in June, and will give succession and remain in perfection until the following February. Like other good Grapes there are plenty who do not entertain any high opinion of it. This is entirely for want of knowledge of its good qualities. There is nothing peculiar or unmanageable about it that need deter anyone from planting it as a late black Grape, according to the space they have at command.

Trebbiano.—This, when thoroughly ripened, is a very excellent late light coloured Grape. I tasted it this autumn at Drumlanrig, and it had a flavour as high and rich as Muscat of Alexandria. It grows freely in any kind of Vinery, and keeps until the Vine shows leaf in the spring. It is not a variety which I would recommend to be planted in quantities; but, as a useful late Grape, it is highly worthy of a place in every Vinery.

Duchess of Buccleuch.—This is a favourite Grape of mine. In character it is like the Hamburgh; it is second to none in flavour; the bunches are very long, generally from 1½ to 2 feet, nicely shouldered and tapering to the point. The berries are small, but, when fully cropped, the whole has an extremely handsome appearance. It should never be omitted from the list of an early house, for it will fruit more certainly there, and perfect as heavy a crop as any other variety. It also does remarkably well for fruiting in a pot.

Gros Guillaume.—This is often grown under the name of Bar-barossa; and Seacliffe Black is said to be synonymous with both, which I very much doubt. The bunches of this kind are generally very large and handsomely proportioned. It requires a Muscat-house temperature to ensure success, though in favourable localities it does perfectly in a Hamburgh one. The flavour is somewhat like that of the Hamburgh, but not quite so sweet. The fruit hangs for months after being ripe; the berries are quite round, and of medium size. It grows freely, but, in some cases, does not produce bunches in such abundance as might be desired. The foliage becomes prettily tinted in autumn.

Royal Muscadine.—This is a useful early sort, and is well adapted for forcing. It is not often grown in quantities, but as a variety in the early house it is always acceptable. The bunches are generally small, as well as the berries, which become transparent when ripe. The flavour is good, and it bears a very heavy crop either when planted out or in a pot.

White and Grizzly Frontignan.—These are alike in their characters and may be grown together. They are both exquisite in flavour, with small bunches and berries. The Grizzly is not of a

very pleasing or matured-looking colour when ripe, but this should be no obstacle when the flavour is so fine. Neither of them are very robust growers, but they thrive and succeed very well in a Hamburgh-house, and for early pot-culture they are always valuable.

White Lady Downes.—This is similar in every respect to the black variety, only different in colour. It will keep until April. It has no tendency to scald when swelling, as the black one does generally; but if it had, it would not be so much the fault of the Vine as the management to which it was subjected. No scalding need ever take place amongst Lady Downes, or any other kind, if plenty of air is admitted, and the house is kept quite cool during the whole period they are liable to be affected.

Buckland Sweetwater.—This somewhat resembles a white Hamburgh in flavour and character. It is a very useful kind for early forcing, and chiefly grown for this purpose. The bunches often attain a weight of 4 lbs.

Foster's White Seedling is another fine early white Grape, very pleasing in flavour, and deserving of general cultivation where Grapes are grown to be eaten shortly after they are ripe. It is nearly as large in bunch and berry as the last-named, and better flavoured. It grows freely at all times, and makes an excellent pot Grape.

These are varieties which have all been rigidly tested in every way for years, and not a flaw or blemish exists in one of them, so that each or all of them may be planted together with every certainty of their succeeding perfectly. I have purposely avoided mentioning any sort about which I have the slightest doubt, as certain kinds will only succeed under particular treatment of their own, and then often only partly. Those in Mr. Ingram's notes which I have best reason to feel pleased with, and which may safely be added to the above enumeration, are—Mrs. Pince, Lady Downes, Muscat of Alexandria, Black Alicante, Raisin de Calabre, Mr. Bass, Mrs. Pearson, and Golden Queen. The latter two I consider very worthy additions to our late Grapes, and they will fill a place in that way which at present can scarcely be considered to be occupied. J. MUIR.

Gros Colman Grape.—Those who assert that this fine Grape is only pleasing to look at should taste it in the condition in which it is now at Drumlairig. Even experienced judges would unhesitatingly pronounce it to be equal to a richly-flavoured Hamburgh ripened in July. What pleased me not a little was the mellowness of the skin, which melts away in the mouth, leaving no vestige behind. No other late black Grape is so much liked at Drumlairig as this, and certainly, for exquisite flavour, none other need be desired. Gros Colman is but an indifferent Grape when indifferently grown, but cultivated as it is at Drumlairig, it has no equal as a black Grape, not even among kinds considered first-class summer varieties. —J. M., Clovenfords.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Venn's Black Muscat Grape.—We have received from Mr. Dodds, Gladstone Villa, Bishopston, berries of this excellent new black Grape, to which the Royal Horticultural Society lately awarded a first-class certificate. It produces large well-shouldered bunches, the berries of which are oval, covered with a delicate bloom, firm and juicy, and rich in Muscat flavour. It is said to be equal to the Black Hamburgh in hardiness, and free-bearing; and to ripen about ten days later than that variety in a house without artificial heat. This year it was ripe by the middle of August.

Pears on Apple Stocks.—It is very rarely that Pears succeed well on Apple stocks. Sometimes they will give much promise for a year or two, and then fail. The Winkfield and Summer Bon Chrétien will often grow freely for a few years. We have raised about one peck of fine Seckel Pears on a small tree grafted on an Apple five years old, but the union being imperfect, it broke off at the surface of the ground. We cannot recommend the practice, except to those who are fond of unsuccessful experiments, not one in a hundred succeeding after the first year.

Ne Plus Meuris Pear.—For five long anxious years have I waited for this Pear to become eatable, and this season, although matured quite two months before its usual time of ripening, it is now (Dec. 7th) simply delicious in flavour, but rather gritty at the core. With the exception of Passe Colmar, Ne Plus Meuris ranks among the best Pears of the season. I wish I could induce your readers to furnish us with short notes on the ripening of Pears this season in different parts of the country, and also to give us some account of the varieties best suited to their particular locality. In this way much valuable information would be diffused in a small compass.—R. GILBERT, Burghley, Stamford.

A Good Pear Orchard.—The *Eochester Rural Home* quotes a local paper for an account of the 3-acre Pear orchard in Genesee County. It was planted with Duchesse d'Angoulême trees ten years ago, the whole cost of culture being about £220. The seventh year it began to bear, and yielded 20 barrels, at £2, or £40. The eighth year 180 barrels were gathered, and sold at £1 4s. per barrel, or for £216. The ninth year, 220 barrels, at £1 per barrel, brought £220. The tenth year, 204 barrels, at £1 2s. brought £224 8s. Whole receipts, £700 8s., less £220 cost, leaves a net profit of £480 8s., the Potato crop among the rows more than paying for cultivation. This is one of the successful orchards; many more, from bad selection, neglect, &c., do not yield one-tenth part of this sum.

VALUE OF PINUS PINASTER FOR SEA-SIDE PLANTING IN THE WEST OF SCOTLAND.

IN THE GARDEN of the 25th of April and 9th of May of the present year I had occasion to recommend this tree as invaluable for shelter in sea-side planting. That it is a handsome tree, when well grown, may be seen from the accompanying representation taken from a careful drawing of a specimen of it which grows within a mile of the sea at Monreith, the property of Sir William Maxwell. It is about eighty years old, and measures 61 feet in height, 9 feet 8 inches in girth at 2 feet from the ground, above the swell of the roots, and 8 feet 10 inches at 4 feet from the ground. It is said not to succeed on heavy soil; here, on a light soil, all that seems essential to its growth is that it should not be crowded, but that air and light should be freely admitted to it. In this it appears to differ from most other Pines, and to a want of success, resulting from an opposite course of treatment, may be attributed its want of favour with most planters as a forest tree. I should feel obliged to anyone who has tried the timber of the Pinaster if he would communicate his experience, either here or on the Continent in regard to it. The timber of this Pine has never been sufficiently grown in this country to be much in the market, although the price at the nurseries of young plants of it is low. Our experience is, that it will make timber on exposed coasts where other trees will barely exist. A broad belt, composed entirely of Pinaster, would form a grand and useful feature on a windward coast.

SALMONICERS.

ORIGIN OF THE PHYLLOXERA.

MR. LICHTENSTEIN tells us he has seen the Phylloxera of the Vine fly off in swarms to the Garrigues and light upon the Kermes Oaks. We have no reason to doubt his word, but Mr. Balbiani, an entomologist, asserts that the Phylloxera alluded to is not that of the Vine; he does not in his letter (read at the Academy of Sciences, September 21st last) describe the differential characters of the two insects; but, supposing they do differ a little in colour, size, or aspect, all this goes no further than to prove that the Phylloxera found on Oaks differs a little from that found on Vines, and it does not prove in the least that the Phylloxera of the Oak cannot feed on the Vine and *vice versa*, or, that having so totally changed its food, it may not thereby assume some slight modification of aspect and appearance. He says, the Phylloxera of the Vine is found under three different forms, males, females, and certain abnormal states. Now, might not these abnormal ones be either in a state of transition, or strangers from some other habitat? It is very easy to say Phylloxera comes from the west and cholera morbus from the east; but trace them as far west or as far east as you please, and you will never find a country where either the one or the other exists permanently in the swarming multitudes constituting an epidemic; there, as here and everywhere, they exist permanently only in a latent state—a state of germ or ova according to some—a state of another species or variety, capable of being modified into that particular one, according to my views of them; and in either of these states (whichever the true one may be) requiring a particular medium to attract and foster them so as to cause a real epidemic. That this is necessary, appears from the very interesting experiments made by M. Delorme in 1872, before the President and members of the Society of Agriculture of Vaucluse, which consisted in infecting perfectly healthy Vines with the radicles of others swarming with Phylloxera, not one of which had become acclimatised up to August last, the Vines remaining perfectly healthy as before. We know the medium required for the incubation of the ferment causing cholera morbus, or, as I think, for the fostering of the modifications in those ferments causing less deadly forms of cholera, which are permanently among us, diarrhoea, dysentery, cholérine, sporadic cholera, &c. Give them plenty of bad drains and cesspools, filthy dwellings, and foul water, and the species is modified, and the epidemic breaks out. I say we know the medium cholera morbus requires, but we do not know the one Phylloxera requires; and Vine-growers should seek it out, for as long as the medium remains the exciting cause, it is in vain to hope for a cure. This medium might possibly be a weakened state of the Vine brought on by pruning during successive ages; or it might be the sequel of oidium. The prolonged controversies between the adherents to, and the opponents of, spontaneous generation have necessitated a vast amount of microscopic observations and crucial experiments; these, if they have had no other result, have made known a whole world of beings, vegetable and animal, hitherto never dreamed of, and have decisively proved that given mediums produce particular



LARGE PINUS PINASTER AT MONREITH, IN THE WEST OF SCOTLAND.

kinds of animalculæ; but whether the germs of every species of them exist permanently around us, or whether one species may be modified into another, still is and probably will long remain a matter undecided. It is well known in France that you may plant bushels of Truffles, and not one will ever increase in size or beget a second tuber. But if you plant the acorn taken from an Oak which has had Truffles at its foot, you will in three years (in the proper soil, of course) see Truffles begin to appear where never one was seen before. Now, where do these come from? The same people who prohibit the importation of French Vines into Italy, to keep out Phylloxera, and tell you that Phylloxera comes from America and cholera from Asia, will probably answer without hesitation, "Why your Truffles have come from Perigord!" What, inside of an Acorn? Easier said than proved.

Versailles.

F. P.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

THERE is a considerable amount of ambiguity connected with the term "Amateur" as regards gardening. Under this designation some include all engaged in the pursuit who do not make a business of it, ranging from those who have an extensive establishment down to such as cultivate a small plot of ground, with it, may be, a plant house or Vinery upon it—for pleasure or profit, or both combined. These latter are what may be looked upon as amateur gardeners in a legitimate sense of the term; they are a class which may be met with in all parts of the kingdom, but more especially in the suburbs of large towns, and they are continually increasing. Numbers there are who occupy their leisure hours in attending to the different kinds of flowers, fruits, and vegetables, which they endeavour to cultivate, often under difficulties; and for the assistance of such we intend, henceforth, to publish weekly directions, not simply as to the time when such and such operations should be carried out, but in order also to convey, as far as possible, an idea how to perform the work in a way best calculated to produce satisfactory results. Vegetable life in the open air may appear almost dormant during the short sunless days of winter, yet, in a garden, every day and week in the year brings with it some duty to be performed, the omission of which will tell its own tale through the coming season by an absence or deficiency in the particular department neglected. If there is one pursuit more than another, wherein the guiding rule ought to be, "Never defer until to-morrow that which can seasonably be done to day," it is gardening; and where the amateur's gardening operations are thus carried out, the fuller will be his measure of success. In the vegetable department immediate attention should be paid to the removal—if not already done—of the remains of all summer crops, such as Peas, Beans, Cauliflower, and Cabbage stumps; these latter should be placed in the bottom of any ground that is being trenched, where they will slowly rot and materially assist the roots of any vegetables afterwards grown upon the space so treated. The cropping of all vegetable ground should be so arranged that a third or a fourth of the whole space can be deep-trenched every year; and, unless the sub-soil is naturally bad, an inch or two, or even more in good land, of the bottom-soil should be brought to the surface each time the ground is trenched. This is of the most service in old gardens, where shallow cultivation has been practised, and the effects of incorporating a portion of the under-soil with that on the surface, which has become, by length of culture, almost effete, will be found of more service than even a heavy dressing of manure, without the trenching. Where there exists a deep surface-soil, or the sub-soil is composed of clay, I should advise the application of a good dressing of manure at the time of trenching; but, when the sub-soil is of an open, gravelly, or sandy character, the manure should not be applied until the ground is about to be cropped, owing to the wasteful influence of heavy rains carrying the manurial elements away. The old system of ridging up vacant vegetable ground is right in moderately light soils, but, in such as are very retentive, it has this drawback, especially where it has to be cropped early, that the ridges throw off the water into the alleys, which, consequently, get much above their share, and when the ground is levelled for cropping, the wet hollows do not for some time get dry enough to admit of early-sown seeds progressing freely. In strong heavy soil there is nothing equal to draining efficiently in the first instance (without this the results can never be satisfactory), and, as early in the autumn as the ground is at liberty, digging it over deeply without ridging, leaving it as rough on the surface and open as it can be, so that the rains can pass freely through it. The pruning of Apples and Pears should, if possible, be completed before the close of the year; in cold weather it is never a pleasant job, and in the new year the cold is usually more penetrating than before Christmas. In small or moderate-sized gardens large Apple or standard Pears are out of

place, doing much injury to other things that are grown near them; yet, in an orchard—their proper place—the quantity of fruit they yield individually is greatly in excess of even a number of small trees, however well managed. Moderate-sized bush-shaped Apples and pyramid Pears on Quince stocks are both useful and ornamental on the margins of the walks in any garden; and, so grown, are productive in soils fairly suited to the growth of these fruits. Pears on the Quince stock are naturally more disposed to form large quantities of fruit buds than to make much wood; consequently, they do not require so free a use of the knife. Apples, on the other hand, grafted on ordinary stocks, and grown in a kitchen garden in well-manured ground in which their roots feed along with the vegetables for which it was intended, are generally disposed to make too much wood and an insufficiency of fruit buds, a condition aggravated by hard pruning of the shoots. The only method of correcting this over luxuriance and inducing a fruitful habit is to root-prune, an operation best done early in autumn. In the case of trees in the condition just described, and often bearing little or no fruit, the first or second week in September is the best time to root-prune. Thus treated, they are often induced to set a large quantity of fruit buds the same autumn. It is not yet too late to perform the work, but it should not be attempted to the extent that vigorous unfruitful trees require to be operated upon, after the middle of January, or there is danger of, for a time, injuring the trees. The operation is in itself simple; in the case of a bushy tree, say 8 or 10 feet high, open a trench 15 inches wide, on opposite sides, at 3 feet from the stem, not going more than half way round the tree at one pruning, but sufficiently deep to meet with all the roots that extend in a horizontal direction; cut them clean off with a knife; do not leave them jagged with the spade; and if the tree is very vigorous, tunnel under it at, say, 2½ feet deep, to see if it has any strong roots that strike straight down. If such should exist, cut them clean off at the above depth from the surface, and then fill in all the soil, making it firm as it is replaced. Even in the case of very vigorous trees that have hitherto shown no inclination to bear, this will generally check them sufficiently; if, however, in a couple of years' time they are still over strong, the roots may be similarly cut on the sides not yet operated upon. Trees trained upon trellises, that are over vigorous, should be similarly root-pruned. In branch-pruning such trees as are under consideration, it is a bad plan to leave the shoots too much crowded, for several reasons: the fruit does not receive sufficient sun and air, and in windy weather the branches lash each other so as to knock much of it off. Trees that bear freely and are as large as is desirable, may each year have their current seasons' growth cut right out, confining them to the size which they have already attained; but if they do not bear much, and are at all inclined to make over-strong wood, they can only be kept to a limited size and induced to fruit freely by having recourse either to root-pruning or to lifting operations, both of which tend to diminish over-luxuriant growth, and to throw the trees into a fruitful condition, which, when secured, will probably last for many years.

Herbaceous Borders.—These should be gone over before severe frost sets in, removing all decayed tops; but everything at all tender must be mulched with a few inches of dry material, such as old tan, half-rotten leaves, dry shaly dung, or, in a locality where it can be procured, small pieces of Gorse, stuck round each plant, are an excellent protection from frost. There are few finer objects in a garden than well grown examples of Pampas Grass, and although, by some, it receives the character of being sufficiently hardy to stand our severest winters, such is not the case, except in the most favoured localities; consequently, it is better to give it protection. This can be done by tying the head close up like a broom, doubling the points down so as not to leave the plant too high; put a wheelbarrow load of old tan or leaves round the collar of each plant, then take some good long Wheat-straw and place it in the form of thatch all round; get four stout sticks and insert them in the ground close in with the straw, then run some twine round the whole, drawing it up tightly, and tapering it off to a narrow top. The sticks will hold both twine and straw in their place. If the operation is done neatly, plants so treated have not an unsightly appearance, and will bear, without injury, the severest frost.

Greenhouse.—This, in an amateur's garden, is generally devoted to a little of everything, a circumstance which necessitates a compromise of treatment in the different things grown therein. Camellias will now be coming into flower and must receive enough water at the roots, for if the atmosphere is too dry they are almost certain to throw off their flower-buds; but with the continuous use of water for the general stock of plants there is not much danger of over-dryness. Such plants as Pelargoniums, Primulas, and Mignonne in pots, should be placed in the best position as to light, this applies to all plants that grow through the winter; anything like

Azaleas, that are quite dormant will, whilst in such state, bear a worse position. See that nothing remains in cold pits or frames, that cannot be effectually covered in case of severe frost.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Conservatories.—When the earliest *Chrysanthemums* become unsightly they should be removed, and their places filled by such as have been treated with a view to their later flowering. These must be carefully managed so as to prolong their blooming period as much as possible; they should have a little heat at night so as to allow of some air being admitted at the bottom with top ventilation to allow the moisture to escape. *Camellias* are plants which may be induced to flower at any time of the year, yet they do not like too much forcing, for when hurried too much the buds are almost certain to drop off, especially if the atmosphere is too dry. The proper time to regulate their season of flowering is when they make their growth and set their buds; by inducing a portion of the plants to make early growth, and by keeping others later, a longer season of flower will be secured. Consequently, if it happens that the bulk of these plants is flowering too much together, and not so early as may be required, the best plan is to at once remove part of the plants to where they can receive a little heat, and have a sufficiently moist atmosphere to accelerate their flowering, and also induce an earlier growth and disposition to come into flower earlier in future seasons. This separation of the stock is especially necessary where a considerable number of the plants are planted out, and consequently cannot be removed to regulate their time of flowering; where such is the case it is better to reserve those that are planted out for whatever time there is the greatest demand for the flowers, and to use the plants that are in pots for earlier work. That general favourite, *Daphne indica*, will now be opening its flowers and tempting us to cut more of them than we should do, as there is no plant with which we are acquainted that is more injured by cutting than this. No matter how vigorous and strong the plants may be, not more than half the current season's flowers should be cut, and these with as small a bit of the wood attached to them as possible. Winter-flowering *Epacris* will now be coming into bloom; most of these possess a somewhat stiff upright habit of growth; individually this may be considered a disadvantage, but in the conservatory, intermixed with numbers of other plants of bushy or pendent growth, they are of great use. *Epiphyllums*, now in great beauty, should be placed in prominent situations, and elevated so as to stand clear of their neighbours. *Agaves*, *Dasyliirions*, *Yuccas*, *Cordylines*, and *Rhopalas* might with advantage be much more extensively used in conservatory decoration than they are. Most of the species of these genera harmonise well with all kinds of blooming plants, and with little change in the materials at command they can be so altered from time to time as to avoid that objectionable monotony of each plant being always in the same position. Keep a good look-out as to the requirements of the next three months as regards blooming plants. During that time forcing pits will be taxed to the utmost in forwarding the different plants required for keeping up the supply. Introduce regularly in succession such plants as *Hyacinths*, *Narcissus*, *Lily of the Valley*, *Tulips*, *Crocuses*, *Solomon's Seal*, and *Spiræa* (*Hoteia*) *japonica*, all of which will be required in due course. Do not start more of these, however, at any one time, than are absolutely wanted, and never subject them to too much heat, especially top-heat; see, moreover, that their root-action is in advance of their growth above ground, or disappointment will follow, in the shape of a paucity of flowers. Keep them also as near the glass as possible, so as to prevent a weak unsatisfactory growth; for in the case of plants required for conservatory decoration, where of necessity they are subject to a much lower temperature than that in which they have been brought into flower, it is essential that every means should be taken to render them capable of remaining in bloom for as long a period as possible. Assist them with weak manure-water as they progress; yet, before applying this, see that there is abundant root action, otherwise it will do more harm than good. Give all the light possible to the first lot of *Cinerarias* and *Primulas*, now coming into flower, by keeping them near the glass. Apply liquid manure every other time they are watered, the object being to get the growth as strong and sturdy as possible; for when introduced to their quarters in the conservatory they are generally far from the glass, and more or less under the shade of larger plants, where they quickly become unsightly, unless they are in good robust health at the time of their introduction; with this view give air on all favourable occasions. *Syringe Azaleas* coming on for early flowering once in the day, to induce them to push

kindly, and to keep down insects; but let it be done sufficiently early to admit of the foliage getting quite dry before night, otherwise this will cause these plants, for providing cut flowers, to be deficient in substance. We often hear it said that this or that flower will flag as soon as cut, when, in many cases, if the plants had been treated so as to give the blooms the requisite substance, there would have been no reason for complaint. The temperature of the water applied to all plants that are being forced should always be a few degrees warmer than that of the house in which the plants are placed; and where they are in bottom-heat, the water should be as warm as the plunging material, and, if this is deficient in heat, a few degrees warmer. At the same time we do not advocate the application of bottom-heat, only so far as to induce root action somewhat in advance of the growth above-ground; and in the case of plants that are intended for removal to the conservatory, or for producing cut flowers, we should always advise their being gradually withdrawn from bottom-heat after their roots had got sufficiently into action. A few *Genistas* and *Acacias* may now be placed in heat; of the latter, *A. Drummondii* and the old *A. armata* are the best for forcing. Introduce now a few more of the early spring-struck *Hydrangeas*. *Calla* (*Richardia*) *æthiopica* is a general favourite, and at no time is it more useful than during the winter months. Where it can be had in sufficient numbers a portion should now be placed in heat; these will quickly throw up flowers, when they are amongst the most telling of conservatory plants. Supply them plentifully with water. Do not keep the temperature of conservatories higher than is absolutely necessary to keep up a slight circulation in the atmosphere, as such would only shorten the duration of the flowers of many of its present occupants; and, until there is a considerable introduction from the forcing pit, it is not required high; 45° night temperature will now be sufficient.

Stoves.—Such things as winter-flowering *Begonias*, *Apelandras*, *Gesneras*, *Poinsettias*, *Euphorbias*, &c., should be placed at the coolest end of the house, and should receive all the light possible; with a little air whenever the weather will permit; but not in such quantities as to chill the plants, for that is unnecessary, and is, moreover, a waste of fuel. Do not keep too much moisture in the atmosphere, and keep the deciduous portion of the hard-wooded stock comparatively dry, yet not so much so, as to destroy the roots. Now, when the greater portion of the stock is at rest, persevere in the destruction of insects, the increase of which is now at a minimum. Every hour at this season employed at this work is re-paid ten-fold by the saving of time further in the spring, when every day brings its full amount of work. The night temperature should now be from 60° to 64°, allowing an increase of from 5° to 8° by day.

The Flower Garden and Pleasure Grounds.

Except in cases where alterations and improvements are in progress, routine work in this department will simply consist in occasionally refreshing the surface of beds and borders containing spring flowers and bulbs, and in keeping Grass and gravel walks in good order. While the weather continues open and mild the planting of shrubs and trees may still be proceeded with; but such work should now be brought to a close as soon as possible, or deferred until spring. In the meantime, however, plans may be matured as to the arrangement and selection of the trees and shrubs about to be transplanted. Due consideration should always be given to the selecting of species which will best harmonise with the architectural character of the building or buildings with which they are to be associated, as well as with their other surroundings; and the season of the year at which it is desirable to produce certain effects should also be considered. By the judicious employment of trees whose leaves attain a warm tint of colour as they decay, associated with Conifers and other evergreen trees and shrubs, an exceedingly pleasing effect can frequently be produced in the vicinity of country residences and elsewhere, at a season when such effects are most desirable and most likely to be appreciated. Deciduous trees and shrubs suited to this purpose, may consist of such species as the *Acer* or *Maple* of various kinds, and white or silver-barked *Birch*, which produces a remarkable effect among dark foliaged evergreens of various sorts. The *Populus fastigiata*, or Lombardy Poplar, may also be occasionally used in suitable positions, as may also *Scarlet Oaks*, the *Venetian Sumach*, or *Rhus Cotinus*, and, in appropriate situations, drooping plants, like the *Weeping Cherry* and *Weeping Willows* (*Salix babylonica* and *S. caprea pendula*), with such varieties of the *Lime tree* or *Linden*, as *Tilia rubra*, *T. alba pendula*, &c., while the bright red wood of the common *Dog-wood* (*Cornus sanguinea*), may be so placed as to produce a very desirable effect, which may be heightened during the autumnal months, by clothing the naked stems of deciduous trees with *Virginian Creeper*. All newly-planted Conifers, or other trees

of which there may be any doubts as to hardiness, must be accommodated with some slight protection during the first winter, should intense frost set in; and when the weather is moderately mild deciduous trees and shrubs, may, if necessary, be pruned now, while, the pruning of evergreens should be deferred until spring.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Indoor Fruit Department.

Vines.—If there be any foliage still remaining on Vines where fruit is still hanging it may all be removed at once; clear the whole out, and do not let any of the leaves remain lying about the floor or pathway, as they will serve no good purpose there. Grapes will suffer very little from damp or decay of any sort after this time. November I take to be the most trying month of the whole year for Grape keeping; this may probably be accounted for by the active state of the sap in its descent. All other things being carefully attended to, the fruit will not suffer so much for the next three months as it has done in the past one; do not give any more fire-heat than is absolutely required; it is not by inducing a high temperature now and then, but by a uniform temperature throughout, that preservation is ensured. As the weather is now very cold, a considerable amount of fire-heat will be required to keep up the desired temperature in those Vineries which have started into growth. As strong firing is resorted to, reduce the aridity of the atmosphere by sprinkling the surface of the border, paths, &c., place evaporating troughs on the flow-pipes, and keep them constantly filled with water. This is a very beneficial way of supplying moisture, but no water must be poured directly on the pipes to fill the house with steam, as many young and tender leaves and shoots are frequently scalded in this careless way; air must be given to these with still more care than formerly, and various modes have been devised for accomplishing this in the most advantageous manner possible. The best, and most simple, and efficient, that I have had any experience of, or seen tried, is that ingeniously invented by Mr. William Thomson. This consists in having the front flow-pipes incased in a thin outer one; the latter is perforated on the top, and is connected with the exterior by a projecting pipe through the front, where the cold outer air enters, mingles with the warmed air while passing around the incased hot-water pipe, and enters into the house through the small holes at a very genial heat. All the pipes need not be fitted in this way; two lengths are generally sufficient for a moderate-sized Vinery. Many of your readers will remember the very neat model of the system which the inventor showed at the great exhibition in 1851, and it has been adopted in many places with much success.

Pines.—Where last week's directions for these have been carried out the early batch of Queens will now be neatly and snugly started. The atmosphere about these should be kept very moist. Sprinkle the path with water hourly if necessary; never let the evaporating pans become empty. Stuff the space, which generally exists between the pipes and the walls with Moss, and keep the latter constantly moist by damping it with a pan; this keeps the atmosphere continually in a good growing state, and the harder the firing is the more freely is the moisture given off. Where no bottom-heat valves are placed to modify the temperature in that direction, the heat in the plunging material may become excessive, when the pots should be slightly eased, that a small space may be made between them and the fermenting stuff; this simple action lets the heat escape and prevents the tender roots from getting burned. Cover small pits in which suckers, &c., are placed during cold frosty nights, and see that the covering is removed throughout the entire day to admit all the beneficial light possible.—J. MUIR.

Hardy Fruit.

Where to plant fruit trees is a subject which was pretty fully adverted to by me some two years ago. On that occasion I advised all vacant walls of cottages, farm buildings, workshops, factories, warehouses, public institutions, the roofs of cottages, sheds, &c., to be impressed into the service of fruit production. A few attempts seem to have been made here and there to carry out this advice, but the major portion of our unoccupied walls and valuable roofs continue bald, unproductive, and unprofitable, as they were. Enough, however, has been accomplished to show the practicability and profitableness of planting unfurnished walls. Many a cottager pays his rent with the Golden Apricots that furnish and adorn the gable end of his cottage. It matters little what the seasons are; these trees enjoy a charmed life. The heat from the chimney and the overhanging eaves do it all, and provide the tree, rich in bloom, with a panoply of safety. Peaches and Nectarines, of the choicest varieties, would do equally well, and might bring more money. Against the north and east walls would grow first-rate Golden Drop or Jefferson's Plums, and Morello and other Cherries. There is never any difficulty in commanding good prices for such fruits.

Figs and Grape Vines would thrive well on the roofs of stables, cow-houses, cart-sheds, &c. The heat of the animals would prove of great service in moderating the severity of the cold, and would put such trees through their danger-period safely. Numbers of exhausted trees, of second and third-rate varieties, cumber the ground to little purpose up and down the garden. These should be uprooted, and an equivalent space set apart, if possible, to the most approved sorts, on the best stocks, and in the most profitable form, as bushes, pyramids, cordons, dwarfs, and standards. Further, the hedge-rows in many of the inside fields of farms and meadows might be planted with standard Apples, Pears, Plums, Cherries, Damsons, Walnuts, Quinces, Medlars, &c. This would adorn the landscape with cheerful beauty and fill the national fruit basket to repletion. In many places in woods or on their outskirts, sheltered by the density of their masses, groups of our hardier fruits would thrive, and form so many lights to the frequently excessive shade of large masses of timber trees. The corners of Grass meadows or dairy farms might often be planted for the double purpose of fruit and shade. Such hints will, it is hoped, prove suggestive to many readers, and set them to plant fruit trees in all waste places at once.—D. T. FISH.

Kitchen Garden.

Remove all decaying leaves from Cauliflower and Lettuce plants in frames; scatter dry charcoal dust or wood ashes freely amongst them, give abundance of air, even on frosty days, if the sun shines, and see that all the glass is clean so as to admit a maximum amount of light during the short days. Frames and lights that will shortly come into use for forcing should be thoroughly cleaned, to be in readiness when required for use; have a good supply of dry Fern straw or other protecting material at hand for covering anything that may require it if severe frost sets in. Lettuces may be successfully grown in pots in an unheated orchard-house; and, although it involves rather more labour than merely planting them in the borders of the house, there is an advantage in being able to move them at any time; the borders, too, at this season are often too hard and dry for promoting rapid growth in any green crop. If there be any difficulty about a supply of well-blanching Endive, it may be easily pushed forward by taking a few plants at a time into the Mushroom-house. Where there are plenty of roots there will be no difficulty in having a good supply of forced Asparagus now. The hot-beds from which the first lot is taken may be used for sowing Carrots and Radishes; or, if a lining can be put round to renew the heat, a second lot of Asparagus roots may be placed in, or the frame may be planted with early Potatoes. Pot a few roots of Sorrel and push it forward in heat for flavouring. Successions of Balm, Borage, Tarragon, Mint, Tansy, &c., should also have attention. If mice are troublesome to recently sown Peas or Beans; scatter sifted ashes thinly all over the drills, this will preserve them from their attacks. Soot may be used freely to stop the depredations of sparrows and slugs. Get all vacant plots of land manured and trenched, or dug without delay, when the weather is suitable for such work. I believe when the manure is in a condition to go on the land (provided the ground is vacant), the sooner it is taken there and dug in the better. Exceptions to this rule are often made in the case of poor hungry sands or gravels, on the plea that the rains will wash it down beyond the reach of the roots if applied to the land before the crop is put in. The true and obvious remedy in such a case, however, would be a good dressing of clay or marl; I believe this is the best way to improve land that is so sterile that it cannot retain what is put on it. The most fertile land is also, as a rule, the most absorbent and retentive; and, in fact, its fertility is, in some measure, due to its absorbent and retentive qualities. To improve the staple of light land and make it more retentive, heavy dressings of clay should be put on at this season, clay or clayey marls, or marls in which chalk abounds; whichever is most accessible may be applied to light land with very considerable advantage. In fact, this should be the first means adopted for its improvement. From fifty to eighty, or even one hundred, loads per acre may be applied, according to its condition. It should be run on during frosty weather, be spread over the surface, and remain exposed to the action of the weather till just before the land is required for cropping, when it should be lightly forked in. Salt is another substance that may be beneficially applied to light land, or any land where the crops suffer from drought. Salt is largely used on the light lands of Norfolk, and its effect is, in a dry season, little short of marvellous. It is best applied in early spring as a top-dressing, at the rate of from 10 to 15 lbs. per rod. Whenever a garden is overrun with slugs or snails, salt is an excellent thing to use. When mixed with soot, it forms an excellent dressing for poor lawns that soon scorch with the sun heat in summer; but it is best applied in showery weather in spring.—E. HOBDAV.

THE ARBORETUM.

TRANSPLANTING PINES AND EVERGREEN SHRUBS.

I AM compelled, reluctantly, to offer a few strictures upon the somewhat lengthy article which you have published on this subject at p. 503. Its author being personally unknown to me, I trust that he will receive my remarks as they are intended, viz., to place a few facts, which cannot be controverted, in juxtaposition with what I doubt not he believes to be good practice, but which, in reality is not. The writer of the article in question winds up his remarks as follows:—"Having thus considered the subject of transplanting in general, the season and circumstances best suited for the various species, and the many precautionary measures to be observed in the process, and having also glanced at the methods usually employed in removing large specimens, and the sizes most to be recommended for the purpose, it would be improper, before concluding, to omit mentioning the immense success in this department of landscape gardening achieved by the late Sir Henry Seton Stewart, of Allanton (the Evelyn of his day), with the aid of the machinery devised by himself, of which the implements used now-a-days are but slight modifications and improvements." How can this be, when I assert, without fear of successful contradiction, that in February, 1831, more than forty-four years ago, Sir Henry Stewart's machine and implements were found useless for the removal of three Cedars of Lebanon, varying from 28 to 33 feet in height, with trunks from 3 to 4 feet in circumference; and in November of the same year for the removal of another tree 43 feet in height, 48 feet diameter of branches, and 6 feet in circumference of trunk—and that a machine and implements equal to the task had to be invented by me? The four trees then moved at Elvaston Castle are in high vigour now, and since then have nearly doubled their dimensions. During the last forty-four years, with machines of my own invention, of which there are six sizes, I have removed great numbers of large trees. The trees to which I allude varied from 1 to upwards of 21 tons; not one of these has been operated upon with machinery at all like Sir Henry Stewart's, and all of them, except four, have been removed without any previous preparation and without regard to the season of the year. The late Mr. William M'Nab, curator of the Royal Botanic Gardens, Edinburgh, under whom I studied three years, honoured

me with several visits at Elvaston, whilst I was engaged in laying out the gardens and grounds there; and, on one occasion, happening to come just as a tree was being taken into the grounds, he expressed himself much gratified with the novelty and excellence of the means used in the operation of transplantation. Of the first four large trees moved in February, 1831, the first three were prepared in August, 1830, by order of Lord Harrington; they were all Cedars of Lebanon. About a fortnight after I had commenced operations in laying out and enlarging his

grounds, he took me to see them, and then asked me if I knew anything about the removal of large trees; I told him I was conversant with Mr. M'Nab's system, and he then enquired whether I knew anything of Sir Henry Stewart's. I told him I did. Lord Harrington then requested me to have the trees at once prepared upon Sir Henry Stewart's system. Next day I had all the three trees prepared by cutting a circular trench, 2 feet wide, down to the sub-soil and quite below all the roots, at a sufficient distance from the trunk, in proportion to the respective sizes of the trees, as to ensure success; all the earth taken out of the trenches being thrown away, I had them filled with suitable soil to encourage the growth of roots for the next two years, prior to removal, as directed by Sir Henry Stewart. About a fortnight after this his Lordship astonished me by saying that he should remove these Cedars during the following February. I asked what good was to be expected from this preparation by that time, for I knew that Sir Henry based his success on the trees being prepared for removal two or three years beforehand in order that they might form root-lets the first season and roots the second. And as I was expected to remove the Cedars almost at once, I was obliged to say plainly that were Sir Henry Stewart there in person with all his appliances he could not remove one of them, nor would he attempt it. His practice, I added, had been



Barron's Tree Transplanters.

confined to comparatively small deciduous trees, with both flexible branches and roots. He denudes all the roots up to the trunks, and then brings his "two-wheeled janker," and divides the roots as well as he can, and then lashes the pole of the janker to the stem of the tree; that being done, the tree is pulled down and carried horizontally, root first. I explained that to follow this plan with the Cedars at Elvaston, with their extremely brittle roots and branches, would render them fit only for the faggot pile, if the effort were successful to carry them at all; but even that would have been impossible, as the janker would be put out of sight by branches extending

from 15 to 20 feet from the trunk. His lordship seemed much disconcerted, and I saw he was disappointed; but I adhered to what I had said—that it was impossible, upon Sir H. Stewart's system, to remove the trees so as to make them grow, but I told him if he would risk his trees, and accord me his support, I thought I could remove them successfully, and, having left the matter in my hands, these trees were removed in February. In November following, when forming terraces and laying out what was afterwards called Mon Plaisir, I was obliged either to cut down, or remove a Cedar, in front of the castle, 33 feet in height, 48 feet across the branches, and 6 feet round the trunk. I preferred trying the latter course, and was again successful. These four trees were all removed as my first attempt, and then measured, and have increased in girth and height as follows:

INCREASE IN GIRTH AND HEIGHT MADE FROM THE TIME WHEN THE TREES WERE PLANTED TO THE PRESENT, VIZ., FORTY-THREE YEARS:

Height in				Circumference in			
1831.	1874.	Increase.		1831.	1874.	Increase.	
ft.	ft. in.	ft.	in.	ft.	ft. in.	ft.	in.
No. 1 ... 28 ...	77 10 ...	49	10	No. 1 ... 4 ...	7 2 ...	3	2
No. 2 ... 32 ...	81 8 ...	49	8	No. 2 ... 3 ...	9 8 ...	6	8
No. 3 ... 35 ...	76 4 ...	41	4	No. 3 ... 3 ...	9 6 ...	6	6
No. 4 ... 33 ...	54 10 ...	25	10	No. 4 ... 6 ...	9 9 ...	3	3

DIMENSIONS AFTER REMOVAL IN FEBRUARY, 1852:

Height.				Circumference.			
ft.	in.	ft.	in.	ft.	in.	ft.	in.
No. 1 ... 46 0		6	1	No. 3 ... 58 6		6	0
No. 2 ... 55 6		6	3	No. 4 ... 44 0		7	10

It may be asked why Nos. 1 and 4 did not increase in the same ratio as Nos. 2 and 3; but the cause is easily explained, viz.:—No. 1 was planted on the south side of the grand avenue, and shaded from the solar action by very tall trees; Nos. 2 and 3 were planted on the north side of the same avenue, which runs east and west; consequently, they were at all times exposed to the sun's rays, and No. 4, after it had been planted only a few years (in consequence of surrounding objects), had its branches foreshortened several feet, thus lessening its elaborating powers. The accompanying wood-cut, made from a photograph, represents a large Scotch Fir removed in July, and brought upon one of our machines eight miles into the show yard at Leicester the week before the show which was held in 1868; the week after it was removed five miles and planted, and still lives, after having been eleven days upon the machine, exposed to a cloudless sky and a broiling sun every day during the whole of the time. This tree was seen by the thousands of visitors who attended the Royal Agricultural and Horticultural Society's shows, when they met conjointly at Leicester, some six years ago.

WILLIAM BARRON.

Barrowash, near Derby.

PACKING TREES FOR LONG JOURNEYS.

Drying and exposure to the air always injures roots. The longer the exposure, and the greater the drying process, the greater, of course, is the injury. Digging up trees when destitute of leaves, and leaving them an hour or two in the shade, produce but little or no harm; but to remain in the sun, or to expose them for a whole day to the air, should not be allowed. If they cannot be set out or packed immediately, they should have the roots plunged in a bed of mud to give the surface a thin coating, or the roots should be immediately buried in mellow soil or sand until further operations are commenced upon them. Nothing is more common than serious injury to trees by deficient packing. Nearly all those from nurseries are carried to some distance. Some are taken by waggons; and the practice has not been an unusual one to leave the roots exposed for days together. Many trees are now sent by steamboat and railroad, and are sometimes weeks on the way. In such cases, the complete protection and preservation of the roots is a matter of the greatest consequence. The packing in which the roots are imbedded, should as nearly as possible, resemble in effect the bed of moist soil from which they are removed. This is most effectually accomplished by first dipping the roots into mud, and then surrounding them with damp Moss. At the same time, to prevent external injury, the roots and branches must be well surrounded with straw if in bundles, or with a strong box if the latter is used. To pack well requires considerable practice and skill. It also involves some expense, which purchasers often begrudge, and hence, to save 5 per cent. in this way, they often lose 20 per cent. of their trees by exposure. The great number of trees packed annually, and the large amount on which the work is imper-

fectly performed, induces us to offer a few practical hints to beginners. In the first place the materials must be provided. For packing bundles these must be, 1, a prepared bed of mud, which is best made by setting half a hogshead (made by sawing in two) in the ground, in which to stir thoroughly the soil and water; 2, Moss; 3, straw, of which Rye is much the best; 4, straps of stout leather, 2½ inches wide, with very strong buckles at one end; 5, cord, about one-fourth or one-third of an inch in diameter; 6, strong sewing twine; 7, a strong packing needle, 6 inches long; 8, bast-mats, sacking, or gunny-cloth; 9, direction labels.

To pack a bundle, first lay down on the ground two of the leathern straps, already spoken of, about 3 or 4 feet apart and parallel with each other; on these deposit a layer of long, straight, Rye straw, about 2 or 3 inches in thickness. If the trees are long, lay down another strap, and another length of straw lapping on the last. Then place a layer of Moss on one end of the straw, and the roots of the trees, previously dipped in the mud, on the Moss. Proceed to lay on the trees successively, sprinkling Moss among the roots, and straw among the stems and branches, taking care, at the same time, that the roots lie as compactly as possible with each other, and the stems perfectly parallel and not crossing. When a sufficient number of trees are made into a pile for a bundle, a layer of Moss is laid over the roots, and straw on the stems and branches, as below. The straps are then brought up, and two or three men draw them strongly through the buckles, until the whole is compressed into a round and compact bundle. Next, in order to secure the straw firmly to its place (having previously, while drawing the bundle together, adjusted it evenly over the whole surface), a cord must be passed round it from bottom to top at intervals of 6 inches to a foot, first tying it



Fig. 1.

to a strong root, and then proceeding upwards by successive loops as in fig. 1. To keep the straw to its place, these loops must be tightened with great force, which is best accomplished by two men working together, one of whom forms the loop and keeps it to its place, and the other passing the cord round a short strong stick, draws upon it by this means with his whole strength, the first one holding it to its place while another loop is made. The end of the bundle being slightly raised on a bench from the ground, the work is rapidly accomplished—the leathern straps being successively taken off as the cording proceeds. Lastly, a mat or piece of sacking is spread under the roots, after they have been well covered on every side with Moss and a coating of straw, and its corners are drawn together, and the whole well secured by sewing with twine. The direction label is then sewed or corded on, and the bundle is ready for shipment (fig. 2). This is the simplest mode of packing a bundle, and answers well for all of moderate size. Usually, however, there are some modifications or additions needed. If, for instance, there are several sorts of trees and several of a variety in the bundle, as usually happens in filling retail orders, it is best to tie up each variety by itself, with a small straw band, and with an admixture of straw among the stems. These are then all placed together on the straps, Moss mingled well with the roots, and brought compactly into a bundle, and kept together by a few twisted straw bands. The external coating of straw and cording is applied afterwards. Very large bundles are likewise more securely packed by first binding them together, as above mentioned, and strapping them externally afterwards. Ropes, doubled, so as to form a loop, are sometimes used instead of a strap to draw the bundles together, but they are more apt to cut or bruise the trees than the flat surface of the leather, and need a thick bed of straw under them. Others employ a windlass for tightening; but this should be used with caution, and with a full supply of straw interspersed among the stems. In the spring of the year, when the buds start and the bark consequently is free, great care should be used to prevent bruising, by a copious use of straw—and all easily broken trees, such as Plums, dwarf Pears, &c., need special care of this kind. Fifty trees of common size, 7 or 8 feet high, will be enough for an ordinary bundle, covered with a mat or sack 3 by 5 feet—and two active men will pack, in the best manner, about six or eight in a day. Boxing Trees should be adopted where they are sent very long distances. For trees in large quantities, it is most economical to employ large boxes, such as will hold 200 or 300 7-foot trees. The size may be about 9 or 10 feet in length, and over 2 feet square inside. These, when filled, will weigh about 700 lb. They should be of boards not more than three-fourths of an inch thick, with battens or cleats across the ends and middle, secured by wrought nails, and when the box is filled, they should be banded with hoop-iron at the ends. In filling, the trees



Fig. 2.

should be secured to their places occasionally by cross pieces placed within, and nailed at the ends from the outside. These prevent the boxes spreading, keep the tops and bottoms from being crowded off, and hold the trees firmly to their places. The same care as for bundles is needed in mudding the roots, packing in Moss; and securing the stems from bruising by an intermixture of straw. A lever, like that for filling flour barrels, may be carefully used for compressing the contents. For marking boxes, a mixture of lamp-black and turpentine is most convenient, as it immediately sinks into the wood and becomes dry at once.—*Rural Affairs*.

METHOD OF CLIMBING TREES.

PEOPLE who live in wooded districts frequently find it convenient to have some way of readily climbing a tree. In felling trees where timber is valuable, much damage and waste is prevented by being



Fig. 1.—Climbing Trees with Stirrups.

able to bring the tree down exactly where it is wanted. To do this it is often necessary to climb the tree to be felled, and, sometimes, an adjoining one. In making surveys in wooded districts, or in taking a more extended view in places that are partially wooded, it also becomes necessary to ascend a tree. The *Agriculturist* describes a ready method of accomplishing this by means of a pair of spiked stirrups as in fig. 2. This contrivance is a flat iron bar, about an inch wide and a quarter of an inch thick, bent to pass under the boot in front of the heel, with loops by which it may be strapped to the leg. A sharp, stout spur is fixed at the lower part, and, when the stirrup is worn, this spur comes at the inside of the foot. When a person wishes to climb a tree, one of the spikes is thrust into the bark and then the other, a step upward being taken each time. A cord is carried around the waist, and, if it be necessary to do any work while up the tree, the climber can pass the cord around his body and the tree, and make himself secure. The rope also answers to draw up tools or anything else that may be wanted. The method of climbing, by aid of these stirrups, is shown in fig. 1. [The natives of the Pacific islands have a very simple method of climbing the bare, lofty shafts of the Cocoa-nut tree by fastening round their ankles a thick skein of flax or Cocoa-nut fibre, of sufficient length to keep the feet some 18 inches apart. The tree is then encircled with both arms, and the fibre of the material round the ankles binding against its rugose bark, a sufficient hold is given to enable the climber to shift his grasp higher up, and thus rapidly reach the summit without much exertion.]



Fig. 2.

THE LIBRARY.

ECONOMIC GEOLOGY.*

WORKS on geology, from the rudimentary treatise for beginners to the higher and more elaborate standard volumes of Murchison and Lyell, are numerous. These, however, deal for the most part either with the science, *per se*, or, less frequently, in its relation to agriculture, building-stone, or coal and metallic ores. Until this volume appeared, no author had undertaken to point out the position of geology in regard to the arts and manufactures, and a want very much felt has thus been ably supplied. But, "whilst primarily intended for the student of applied geology," to quote the words of the preface, "it may be useful to the agriculturist, builder, miner, civil engineer, manufacturing chemist, and others who have to deal with minerals; and, at the same time, may not be devoid of interest to the general reader." In fact, the author has managed to condense within very portable limits, and submits in a most readable volume which is embellished with excellent cuts, a mass of information respecting the mineral and metallic substances used in the arts and manufactures, which could only be otherwise obtained by repeated reference to a variety of independent sources, and this alone must render the work a most useful text-book to a very large section of the community. Besides this, we have a large number of the earlier pages of the book devoted to the consideration of various kinds of soils, and their geological origin, with many most useful remarks upon drainage and mineral manures. Reviewing these pages more especially from our own point of view, we extract a portion useful to all cultivators.

Soils and Sub-soils.

The soils upon which the agriculturist has to operate are usually classified as sandy, sandy or light loams, loams, clayey loams, heavy or retentive clays, marls, calcareous loams, peaty soils, or bog-earths. This classification has reference chiefly to composition and texture, a special chemical composition (silicious, calcareous, &c.) being necessary for the profitable growth of particular crops, and a certain mechanical texture (friable, porous, &c.) suiting best for the permeation of rain and air, and the descent or spreading of special roots and rootlets. Loams, consisting of fertile admixtures of sand, clay and humus or decayed vegetable matter, may be regarded as typical soils, which become, on the one hand, light, by a preponderance of sand, and on the other, heavy, by a preponderance of clay. But whatever their composition and texture, these soils geologically speaking, are mainly of two sorts—soils of disintegration, arising from the waste and decay of the immediately underlying rocks, together with a certain admixture of vegetable and animal *débris*; and soils of transport, whose ingredients have been brought from a distance and have no geological connection with the rocks upon which they rest. Under the former are comprehended such as arise from the disintegration of limestones, chalks, traps, granites, and the like, and which are directly influenced in their composition, texture, and drainage, by the nature of the subjacent rocks from which they are derived. Under the latter are embraced all drift and alluvial materials, such as sand, shingly *débris*, miscellaneous silt and clay, which have been worn from other rocks by meteoric agencies, and transported to their existing position by winds, water, or ancient glacial agencies. Besides these there are also soils of organic origin, such as peat earths, and vegetable mould or humus, which is to a great extent also of animal origin or elaboration. Indeed, in all superficial soils there is a certain amount of vegetable and animal matter—the decay of plants, the droppings of animals, the exuviae of insects, the casts of the earth-worm, and the like, conferring upon them that dark friable and loamy character so indicative of richness and fertility. Beyond the soils proper, which come immediately under the plough, there are in most situations a set of sub-soils, differing from the true soils, and which cannot be ignored by the farmer. Thus peat may lie upon clay, sand upon clay, common humus on sandy clay, and clay may rest upon shingly *débris*; while in many of our alluvial flats (old lake-sites and estuaries) there may be several alternations of peaty matter, clay, sand, silt, and marl, before the underlying rock-formation is arrived at. In general, the sub-soils differ notably in colour and consistence from the soils above them. The true soils are usually of a darker colour, from the larger admixture of humus, while the sub-soils are lighter in hue—yellow, red, or bluish, from the greater preponderance of iron oxides. The soils are also more or less friable in their texture, while the sub-soils are tougher, more compact, and more

* "Economic Geology." By David Page, F.G.S. Blackwood and Sons.

largely commingled with rubbly and stony *débris*. The soils are usually little more than a mere surface covering, while the sub-soils may be many feet, or even yards, in thickness. All these soils and sub-soils repose on the rocks below, but it is only where they are immediately derived from these rocks, by disintegration, that they are materially influenced by this relation. Hence, for agricultural purposes, it is necessary to have two sets of geological maps—one showing the range and disposition of the older rocks, and another exhibiting the disposition of the superficial accumulations by which these are masked. On examining two such maps of any district in Britain, it will be seen that the soils of disintegration occupy limited areas in comparison with those of transport. In all our river-valleys, dales, levels, fens, straths, and carse, the soils are those of transport, and consist of miscellaneous river-drifts, the alluvia of former lakes and sea-beds, or of the sands, shingles, and bouldery clays of the glacial epoch. Over the higher uplands—largely over carboniferous districts, and on many of the other formations—the drifts of the glacial period are thickly spread, so that it is chiefly on the hilly portions of the chalk, the oolite, the mountain-limestone, the old slates and schists, the traps and granites, that we find soils of disintegration. And even there, there are many patches of bouldery clay, sand, and shingly drift, whose materials have been brought from other and distant localities.

Soils of Disintegration.

All rock-surfaces, however hard and refractory, break up, in course of time, under the influence of meteoric agencies. Those containing lime are acted upon by the carbonic acid of the atmosphere; those containing iron by the oxygen; and all suffer more or less through frosts, rains, winds, and other kindred forces. These disintegrating agencies are further aided by the root-growth of plants, by the burrowing of worms and other earth-dwelling creatures, and in no small degree by the acids (humic, geic and crenic) generated by organic decay. From the hardest granites, basalts, and lavas, to the softest chalks and marls, all are undergoing this disintegration; and the soils thereby produced will vary in depth, composition, and texture, according to the softness and mineral character of the rocks, and the length of time during which they have been subjected to the comminuting forces. If we take a geological map of the British Islands and turn to the districts coloured as granitic, we shall find them largely covered with a thin cold clayey soil derived from the decomposition of the subjacent granite. Ordinary granite is composed of quartz, some variety of felspar, and mica; and it is the felspar (silicates of alumina, with minor proportions of soda, potash, lime and iron) which mainly yield this poor moorland covering, the sterility of which is aggravated by its general high elevation, whitish colour, and the impervious nature of the rock on which it rests. We say whitish colour, for, area for area, white soils take in less heat than dark-coloured ones—the former reflecting and the latter absorbing the solar rays. If we turn, on the other hand, to the tracts coloured trappean, we will find them covered, for the most part, with a dark-coloured dry, crumbling soil, noted for its fertility and certainty of cropping. This arises from the disintegration of the softer trap-tuffs, amygdaloids, and wackes, and consists, according to the analysis of the late Professor Johnston, of silica, alumina, and lime with varying proportions of soda, potash, and iron; its fertility and mellowness being augmented by its colour, which absorbs the sun's heat, and by the fissured structure of the rocks beneath, which carries off all superfluous moisture. In slaty and schistose tracts—that is, those coloured metamorphic, cambrian, and silurian, we find that where these rocks are not masked by diluvial drifts, they have weathered into thin clayey soils of indifferent fertility, partly owing to their elevation, and partly to their retentive texture—green nutritive pastures occurring, as in the southern uplands of Scotland, only where the high inclination of the beds, with their slaty structure, affords a ready and efficient natural drainage. The soft, sandy, and marly strata of the new red sandstone break up into a dry fertile soil, especially suited for Barley and green crops; while the clayey and marly beds weather down to a stiff retentive clay, like that of Cheshire, much better adapted for permanent pasture than for the varied requirements of corn culture. Over the lias and oolite, consisting of alternations of calcareous and argillaceous strata, we have those noticeable belts of dry, rubbly, and stiff clayey soils, which characterise a large portion of England, from Yorkshire on the north-east to Dorset and Somerset on the south-west—the calcareous freestones forming the drier ridges, and the clays the moister valleys. In the south-east of England, the tracts coloured as Hastings sands, Weald clay, greensand, gault, chalk, and London clay, are respectively characterised by thin, light sandy, stiff clayey, or dry calcareous soils—the direct results of the disintegration of their immediately underlying rocks. Indeed, this connection between the

soils and subjacent rock-formation is best seen along the secondary and tertiary tracts of England—that is, from the new red sandstone upwards through the lias, oolite, wealden, chalk, and eocene deposits of the London and Hampshire basins. No doubt sporadic patches of diluvial drifts occur here and there to break the connection, but, generally speaking, the soils, modes of culture, crops (Wheat, Barley, Beans, Hops), coincide with and are favoured by the lithological belts, as depicted on the geological maps of the country. Nor do these lithological areas influence alone the white and green crops of the husbandman; they are equally, if not still more, operative in the growth and value of the timber trees of the forester. The Firs and Larches which thrive so magnificently on the decomposed mica-schists of the Scottish Highlands would be but poor stunted sticks on the thin cold clays of the granite; while the Oaks, and Elms, and orchard-growths which flourish on the marly clays of the new red sandstone, would become stunted and gnarled if transferred to the drier and scantier soils of the chalk and carboniferous limestone.

Soils of Transport.

When we turn to the soils of transport we find them of a much more miscellaneous character, and occupying much more extensive and unbroken areas. Some consist of river-drifts—shingly gravel, sand or alluvium; others of old lake sites—peaty earth, clays, sands; some of old estuary beds—tenacious clays and silts; others, again, of wind-blown sands and sand-dunes; and many of glacial drifts—sand, shingly gravels, and stiff bouldery clays. These may of themselves form the arable soils, or they may constitute the sub-soils, and be overlaid by a coating of less or greater thickness, partly derived from their own disintegration, augmented by the growth and decay of plants, and partly formed by the plough and repeated cultivation. But, whatever be their nature and origin, they are little, if at all, influenced by the subjacent rock-formations, and have to be studied and treated by themselves. Over the old red sandstone, the carboniferous and permian systems, which consist mainly of sandstones, shales, and clays, there is in most parts of the British Islands a thick coating of diluvial or bouldery clay, very stiff, retentive, and sterile. Much of this boulder-clay has been brought from a distance by ice-action; but the major portion, perhaps, is but the ground-up material of the formations on which it rests, hence its reddish tints on old red tracts, and its dark blue colour over the coal formation. In many of our larger plains—Strathmore and Strathearn, for example—there is a very miscellaneous assortment of drifts—sands, gravels, shingly *débris*, and boulder-clays; and in the lower and wetter portions, peat earths and alluvia, the remains of silted-up lakes, or of lakes still in process of obliteration. In our lower carse and valleys—Carse of Gowrie, Falkirk, and along the Humber—there are large expanses of soft plastic clay (old estuary bottoms) of great fertility, but of difficult and uncertain cultivation; while such tracts as the Fens of Lincoln, Romney Marsh, and the like, are chiefly marine silts and marsh growths. Sand-dunes, or link-lands along the sea-shores, and inland marshes, also occupy extensive tracts; and, indeed, by far the larger area of these islands consists of sub-soils and surface soils, having no connection with the rocks on which they rest, and little, if at all, influenced by their proximity. These soils of transport must therefore be studied and treated by themselves, whether as regards fertile and permanent admixture, draining or manuring. Along with these soils of transport may be classed some of organic accumulations, such as peat-moss and bog-earths, which have no geological connection with the sub-soils or rocks on which they repose. Such accumulations are often of great thickness, and rest on old estuary and lake silts, on sands, and on clays of totally different origin; and indeed, as in the case of Blair Drummond, the peaty stratum may be altogether removed in order to expose the finer and more fertile clay that lies below.

Fertile Admixture of Soils.

It must be obvious that soils varying so much in their origin, composition, and texture cannot be all alike culturable and fertile, and hence to correct the one by admixture with the other, to render this one more friable and that more compact, to improve this one by drainage and that by manuring, is the sum and substance of judicious and successful farming. Taking a good loam (an admixture of clay, sand, and organic matter) as the type of productiveness, we find some soils too sandy and light, and others too clayey and heavy. Some soils, though active, soon become exhausted, and are apt to be parched in dry seasons; and clayey soils, though often rich and absorbent of ammonia from the atmosphere, are apt, in wet seasons, to become water-logged and unworkable. It is thus that some soils are too cohesive, others not cohesive enough; some deficient in one element, and others having that element in excess. It is the duty of the skilful agriculturist, therefore, to correct these deficiencies by

admixture, and to bring his soils as near as he can to the normal condition of easy cultivation and fertility. If we take an estate of some extent, for example, and after careful pitting and examination, map out its soils and sub-soils, and find that some of its fields consist of stiff retentive clay resting on the rubbly outcrops of the strata below, others of thinnish loam resting on a sub-soil of sandy clay, some in the hollows and along the streams of soft peaty earth, and the remainder skirting the sea-shore of dry shelly sand, the question arises—How are we to effect a permanent improvement of these various soils by drainage and admixture? The cold retentive clays, on which insolation is spent in evaporating moisture before it can impart any warmth, may be dried by draining, and subsequently cut up and rendered friable by admixture with the shelly sand; and such clayey soils may also be improved by burning, which not only renders them freer, but converts their potash from an insoluble to a soluble state. The thinnish loam might be deepened by sub-soiling, provided there was nothing deleterious in the clayey sub-soil; the soft spongy peat-earths, which throw out their seeds and roots after frosts, might be improved, as every one knows, by an admixture of the clays; and the loose dry sands can be readily compacted and rendered fertile by a good addition of clay, as we have seen near the estuary of the Eden in Fife, where sands, almost useless as sheep-runs, have been converted into profitable grain-fields by admixture with the soft red brick-clays which abound in that locality. We have taken an imaginary instance; but, whatever the example, there are few estates which have not their fertile and unfertile portions, and all of which might be permanently improved by such admixture of soils, and these admixtures often lying within their own boundaries. We refer to lands at moderate elevation, and naturally fitted for the plough; for there are wide expanses in Britain which should never be broken up from their natural pasture, unless they could be put under glass—a provision which fluent expatriators on the conversion of waste lands forget to make allowance for in their Utopian speculations. For such admixtures as those to which we have referred, a geological knowledge of the district is indispensable; and be it observed that fertile admixture of soils is a permanent improvement—a creation, as it were, of new soils—and not like manuring, which is a mere temporary expedient, soon losing its effect, and requiring to be repeated at every rotation.

Draining.

The same may be said of draining, and there is much in draining that depends on the geology—superficial and lithological—of the district in which it is to be effected. The main object of draining is to get rid of superfluous water, thereby rendering the soil drier and more absorbent of the sun's heat, more friable and open in texture for the admission of air and rain, which prevent the generation of deleterious acids, more accessible to the tender permeating rootlets of the crop, and likewise more easy and certain of cultivation. Before excavating the drains, it is always worth enquiring whether the wet is retained in the surface soil by an impermeable underlying "pan," which, if broken up by the sub-soil plough, would be sufficient to let off the superfluous moisture through the underlying beds; or whether the thin clayey soil would not require all the moisture if it were cut up and deepened by sandy admixture? Again, in some very level tracts where sufficient fall is difficult to be obtained, it is also worth trying the nature of the subjacent beds to see whether they might be porous enough to receive and carry off the discharge of the drains. Under some morasses there have been found beds of open quartzose sand, which, when dug down to, were sufficient to carry off all the drainage water; and in the Wealden and chalk districts it is not unusual to find in the porous Kentish rag and chalk, which lie below, a sufficient outlet for the drainage of the superincumbent heavy clays and loams. This property of taking away surface water is possessed by all rocks having sufficient porosity, and especially by sands and gravels, chalks and limestones, absorbent sandstones and fissured trap-rocks. As draining, when thoroughly executed, should be viewed as a permanent improvement, every precaution should be taken to ascertain the nature of the soil and sub-soil to be operated upon, to fix upon proper depths so as at once to deepen the soil, and not to carry off the dissolved manures, to see whether there be surface stones on the estate for the filling of the drains, or whether these might be rendered more efficient by covering the tile-pipes by stones which have otherwise to be got rid of. The sole object of admixture and drainage is to render soils at once more easy of cultivation, and more certain and abundant in their productiveness. The qualifications of a productive soil are thus succinctly epitomised by Professor Ansted:—"It should be composed of nearly equal parts of three earths—sand, clay, and lime; it should contain a certain quantity of decomposing vegetable and animal matter; it should imbibe moisture, and give it back to the air without much difficulty; it should have depth sufficient to permit the roots of plants to sink and extend without coming to rock, to water, or to

some injurious earth; the sub-soil should be moderately porous, but not too much so: and, in case of need, the sub-soil should be able to improve the soil by admixture with it. The proper proportion of the various earths may vary from 50 to 70 per cent of silicious matter, 20 to 40 per cent. of clay, and 10 to 20 per cent. of calcareous matter. According as the climate is wet or dry, the soil should be friable or porous, or adhesive and retentive, and the best soil is that which, in long drought, is never very dry, and in the wettest seasons does not become choked and soured with water." To these remarks may be added those of M. Schübler (Jour. Roy. Agric. Soc.):—"The more an earth weighs, the greater also is its power of retaining heat; the darker its colour, and the smaller its power of containing water, the more quickly and strongly will it be heated by the sun's rays; the greater its power of containing water, the more has it in general the power also of absorbing moisture when in a dry, and oxygen when in a damp, state, from the atmosphere—and the slower it usually is to become dry, especially when endowed with a high degree of consistency; lastly, the greater the power of containing water, and the greater the consistency of a soil, the colder and wetter, of course, will that soil be, as well as the stiffer to work either in a wet or dry state."

Belgian Horticulture.—We have received a copy of the "Annuaire de l'Horticulture Belge,"* for 1875, a book which has much to recommend it in the amount of useful information which it contains. Besides the calendar a good directory of the principal nurserymen, seedsmen, and landscape gardeners is given; in fact, of all connected in any way with horticulture in Belgium, together with a list of the principal horticultural societies, schools, and botanical gardens in that country. More than half the book is devoted to useful remarks upon horticulture, embodying a list of new plants and fruits, hints on pruning, Vine culture, &c., the whole being embellished by good wood-cuts.

MR. J. JAY SMITH ON CEMETERIES.

MR. J. JAY SMITH, of Philadelphia, who edited the *Horticulturist* after the unfortunate death of Mr. Downing, and who was the principal founder of the large and garden-like cemeteries that now occur near American cities, has lately made a horticultural tour in England, and sends us the following notes thereon:—"You suggest to me that my fourth visit to England should give me some right to say a few words on the present position of things in regard to planting, and you ask me to give my views on the topic of rural cemeteries. In the first place I would remark that I am surprised that evergreens are neglected in many quarters, and I would suggest that the Cedar of Lebanon, so adapted to your climate, should be more frequently planted. It is true that its growth is slow, and may take two or more generations to perfect; but what have you to show of such magnificence or of such historical value? There is nothing to equal it. I would say "Plant more Cedars—many more," and let posterity judge of your taste. I could add that my observation teaches me that those Cedars already planted are not always sufficiently cared for; many look dwindling, struggling for life, and it is of equal importance to feed trees as domestic animals. I have noticed many Cedars that want digging round, and pabulum supplied to their roots. This is so easily done that one wonders it is so entirely neglected. If we could have this magnificent tree in our northern latitudes in America, no money would be spared in nourishing it. A good Cedar transmitted to a grandchild would be a really valuable possession. And why are there no Cedars in the parks? The *Aucuba japonica*, so beautiful and valuable, has, I confess, become rather too common; but this plant (now fructified so as to bear fruit for the birds) is invaluable, and so is the Portugal Laurel, which is cut off by our northern winters in America, as it is occasionally even in Southern England; but prize these plants, for there is no substitute for them—no broad-leaved evergreen yet known to take their place. What shall I say of your English, and in fact European, mode of sepulture? You have not caught the idea which has been so popular in America; the human heart clings to the idea that families should be interred together, and while America provides ground in one paternal lot for parents and children and grandchildren, and more even in the future succession, the London cemetery provides only for the present family, and leaves children and grandchildren to provide for themselves. Is this Scriptural, and is it in accordance with those feelings implanted in us by God himself? It does not, accord with the American idea, nor, as we contend, with Nature's demands on our human sympathies. The love of kindred is

* *Annuaire de l'Horticulture Belge*, par Fr. Burvenich, Ed. Pynaert, Ern. Rodigas, and H. T. Van Hulle. Gaud, Bureau de l'Annuaire.

implanted in our nature, and we yearn to rest with them at our decease. Dare I say that the English custom does not quite recognise this desire to rest together; may I add that the American custom fully does? Here we inaugurate cemeteries of such size that the remains of five generations may moulder together undisturbed. In England this mode of sepulture is impossible. The rural cemetery sells a lot of 6 or 7 feet by 3 feet, digs a vault and bricks it, that will contain three or six bodies only, and when successive claimants require space they must seek it elsewhere, probably at a distance from their beloved ancestry. Not so in our American plan; a son, say, buries his parents in sacred premises, where his allotment is so large that both he and his wife, and perhaps several generations to follow can all lie contiguously; he plants and adorns it and it is placed in the hands of trustees who follow each other in succession, and who are desirous of participating in the transaction, because they themselves inter their parents and their children there, and are deeply interested in the permanency of an institution deemed sacred to all the family. Sufficient time, it is true, has not elapsed in America to test the system thoroughly; but the feelings of the public on this subject are all for the maintenance of the charters governing cemeteries, and fortunately these institutions have originated, and are conducted by, gentlemen and men of taste. In England the separation is decreed of the coming from the past generation; in America all that can be done by human foresight is done to ensure a family resting place in perpetuity. What is wanted in England is sufficient appropriation of ground to grant family lots in which may be interred whole families in succession, planted in the most exquisite style of art with Cedars and evergreens especially, and I should be pleased to correspond with Englishmen desirous of benefiting their race in this respect. I deem the rural cemetery a need of the age. As for cremation, I dismiss it as not as yet adapted to the wants and feelings of survivors.

THE TREMELLAS.

THESE strangely curious Fungi are, for the most part, seen on old stumps or the dead branches of trees, whence they shoot forth their wrinkled and tremulous growths, which look more like a mere exudation from the stump itself than a veritable plant. The germs of reproduction are imbedded in the pulp, the sporophores being large, and the spicules usually elongated into threads. We find the Tremellas of various colours—brown, white, orange, or deep violet. We possess nearly a score in Britain, affecting various vegetation, though two or three would seem to spring from the ground. Like the Algæ, they are capable of partial resuscitation by being immersed in water, even after having been kept dry for years. This remark more especially applies to a close ally of the Tremellas, the Jew's Ear (*Hirneola auricula Judæ*). I have met with this singular Fungus on the stumps of Elders. It is of a red-brown colour, like the ear of an American Indian, wrinkled and corrugated, with swelling veins branching from the middle. Autumn is the season of growth, but it continues throughout the winter. I have now before me a specimen of this Fungus that has been perfectly revived, after being kept dry for upwards of two years. *Tremella foliacea*, a rich brown species with a purple gloss, appears with us on old mossy stumps in November. Its curiously puckered growth is sufficiently characteristic of the representatives of the family. It is variable in colour. *Tremella albidula* I have noticed on dead Beech branches, bursting through cracks in the bark. It is pure white at first, but changes with age to a dirty yellow. Another of the family, *Tremella mesenterica*, is partial to the Furze, its orange-tufted masses protruding from the dead stems all the year round. It bears a strong resemblance to the human mesentery, hence the name. There is one other I would notice—*Tremella moriformis*—which appears on the ground, and is not often met with. It is not unlike a Mulberry in aspect, though of a purple black. It communicates a purple stain to paper. I believe none are edible.

PETER INCHBALD.

Hovingham Lodge, York.

Flowers in the Isle of Wight.—I can fully endorse all that Mr. Ewbank has recorded (see p. 511) respecting the beauty of the flowers about Ryde, and the singular mildness of the season there during the months of October and November. When I left Liss, about the 10th of October, nearly all outdoor flowers had vanished; but in the vicinity of Ryde, at St. Helen's, Bembridge, and other places, I was surprised to find what are usually termed "summer flowers" in full bloom at the end of November. A small-leaved Myrtle growing in the little churchyard at Bembridge attracted my especial notice; two particularly fine trees of it were covered with blossom, and a variety of Roses—pale yellow, dark crimson, white,

and all shades of pink—intermingled well with the dark sombre foliage of different evergreen plants that kept watch in that peaceful resting-place. Nearly every grave was a garden in itself. —HELEN C. WATNEY.

LAYING OUT ORCHARDS.

WE have often observed a good deal of inconvenience and perplexity in measuring off and laying out orchards, from a want of accuracy at the commencement. The best way of properly laying out extensive plantations of hardy fruits is well told by an able fruit grower in *Rural Affairs*. If the rows are begun crooked, stake after stake may be altered, without being able to form straight lines, and with only an increase of the confusion. If the first tree, in a row of fifty, be placed only 6 inches out of the way, and be followed as a guide for the rest, the last one will deviate fifty times 6 inches, or 25 feet from a right line, even if the first error is not repeated. We have seen large Apple orchards with rows nearly as crooked as this. To say nothing of the deformed appearance to the eye, they prove exceedingly inconvenient every time the crooked space between the rows are ploughed, and every time the ground was planted and cultivated with crops in rows.

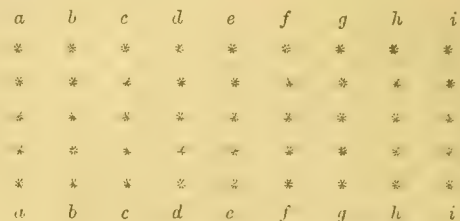


Fig. 1.—Common or Square Arrangement.

The most simple and convenient arrangement for orchards in all ordinary cases, is in squares, as shown in fig. 1. But planters are often puzzled to know how to lay out such orchards with trees at equal distances throughout, and in perfectly straight rows. The easiest and most successful mode is first to measure off one side along the boundary, with a chain or tape-line (a chain is best), and drive in a stake perpendicularly at equal distances (say two rods or 25 feet), in a straight line, and at a proper distance from the fence for the first row of trees. Then measure off each end in the same way; and between the two last stakes in these end rows, form another line of stakes like the first, which will be parallel and opposite to it. The more accurately the measuring is done, the less labour will be required in rectifying small errors—no stake should stand half an inch out of a straight line. These rows are represented by the letters *a, b, c, d, e, f, g, h, i*. Then measure off the distance between *a* and *a*, driving in a small stake or peg at each distance of two rods; and then in the same way between *b, b, c, c, &c.* If accurately done, these will all form perfectly straight rows. The holes may then be dug without the least difficulty or embarrassment, and the trees set out. But a difficulty arises, as the stakes must be removed in digging the holes; this is at once obviated by the plan here proposed, by placing the tree in a line with the row of stakes on one side, and with the newly set trees on the other, as the holes are successively dug, and the trees set. These directions may seem quite simple, but for want of being generally understood, a great many crooked lines of trees are seen through the country.

The second mode of arranging trees is in the old quincunx form (fig. 2), which is nothing more than a series of squares laid off diagonally, and has no special advantage to recommend it except novelty.



Fig. 2.—Old Quincunx Order.

The hexagonal or modern quincunx (fig. 3) possesses two important advantages. One is its more picturesque appearance, and its consequent fitness for proximity to ornamental plantations; and the

other is its greater economy of space, as the trees are more evenly distributed over the ground. This is shown in fig. 4, where each



Fig. 3.—Hexagonal or Modern Quincunx.

tree stands in the centre of a circle, surrounded at equal distances by six other trees, and each single circle leaves but little vacant space beyond it. If cultivated with horses, the furrows may be drawn in three different directions, instead of only two, as in the square arrangement. One principal reason why the hexagonal mode is so little adopted is the supposed difficulty in laying out the ground. But, like many other apparent difficulties, it becomes very simple and easy when once understood. To lay off a piece of ground for this purpose, measure off one side of the field at equal distances, as already described for squares, as at *a*, *b*, *c*, *d*, *e*, fig. 4. These distances must be the distance apart at which the trees are to stand, because they form the sides of the equilateral triangles into which

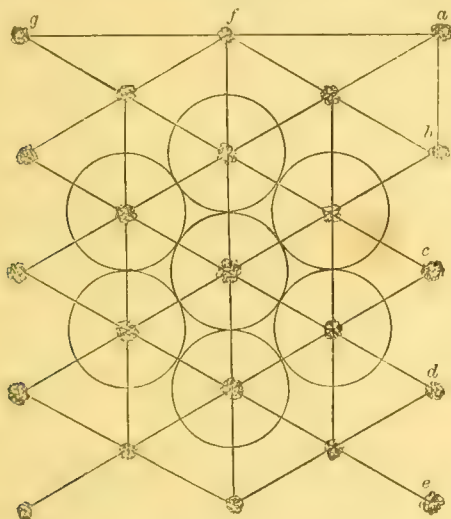


Fig. 4.

the whole ground becomes divided. The next thing is to find the distances, *a*, *f*, *g*, for the line of trees at right angles to the first mentioned row. An arithmetician will easily determine this, for the triangle, *b a f*, being a right one, the square of *b a* (which is 33 feet), subtracted from the square of *b f* (which is 66 feet), will leave the square of *a f*, the root of which, extracted, will give the distances *a f*, *f g*, &c., which is 57 feet $\frac{1}{2}$ inch. Divide this, and the opposite side of the field, therefore, into distances of 57 feet $\frac{1}{2}$ inch, and the side opposite the first, into 33 feet distances, and proceed to stake off all intermediate intersections, as described for squares. If the distances are less than 33 feet, as they would be for any other kind of fruit trees, a corresponding portion is of course to be taken, and which is easily determined as above.

FALL AND RENEWAL OF THE LEAF.

IN Dr. Ascherson's report on the vegetation of the Libyan Desert, published in the *Botanische Zeitung*, there are some interesting notes on the fall and renewal of the leaves of deciduous trees. In our climate (says *Nature*) we have little difficulty in understanding the distinction between evergreen and deciduous trees and shrubs, because the greater part of those that change their leaves cast the old ones in autumn or early winter; and evergreens with flat leaves have them more or less coriaceous. But even with us there is a gradual transition from evergreen to deciduous through *Euonymus europæus* and *Ligustrum vulgare*, both of which have strictly evergreen congeners in *Euonymus japonicus* and *Ligustrum japonicum*. Some few years ago Hoffmann started a theory that sempervirence could

be artificially produced, and there is no doubt that climate influences to a great extent the length of the period during which really deciduous species hold their foliage; but it appears far more probable that these are physiological peculiarities not altogether dependent upon climate, as we find evergreen and deciduous species growing in the same regions and under precisely similar conditions. Some evergreens do not change their leaves at all, and even retain them for many years or all their lifetime; *Arancaria imbricata*, for example. *Taxodium distichum* one of the few deciduous Coniferae, offers a very curious phenomenon, inasmuch as the ultimate branchlets are deciduous. The observations chronicled by Dr. Ascherson agree almost entirely with our own experience. On his outward journey he traversed 25° of latitude in less than a month, which gave him an excellent opportunity for studying the conditions of the same species under very diverse climates. Thus, for instance, in the plains of Lombardy many deciduous trees, and especially *Morus alba*, were still partially covered with foliage on the 19th of November, the same species having long previously shed their leaves in Germany. In a similar manner, the Fig trees in Lower Egypt (31° N. lat.) were partially clothed with foliage at the beginning of December, and in Upper Egypt (27° N.) were still in full leaf, whilst already, on the 24th of November, they were quite bare in the Apulian Plain (41° N.). On the 11th of December, the Pomegranate trees in the gardens of Siout were in yellow leaf, and on New Year's Day, 1874, the Apricot trees at Farafreh were still in their prime of green leaf. Hence, one might readily imagine that on approaching nearer the equator these same species would exhibit no interval between the fall and the renewal of the foliage, and thus, to all intents and purposes, become evergreen. But this phenomenon was only verified in the case of the little cultivated Peach trees of the oases, in which it may not be constant. Moreover, the Peach tree shows the same tendency in mild seasons with us. In the oases, at the beginning of March, when the trees began to blossom and make new growth, the old leaves were still fresh and capable of assimilation. All other deciduous trees and shrubs cultivated in the gardens of Kasr Dghakel (25° 45' N. lat.), including the Grape Vine, Apricot, Apple, Pomegranate, Plum, Fig, Mulberry, and Willow (*Salix safsaf*), had lost their foliage on the arrival of Dr. Ascherson, or became leafless before the end of January. It should be mentioned that the fall of the leaf in this region does not proceed with the same regularity as at home, for it is not unusual to see quite naked and fully clothed trees of the same species standing side by side. Again, the presence of abundance of moisture has the effect of enabling the trees to carry their old foliage longer, and put forth their new earlier, than trees growing in drier situations. And some of the Willows growing by water were quite evergreen; that is, after the manner of the Peach trees mentioned above. But the Apricot, one of the most abundant trees, rarely retained even a few scattered old leaves on the appearance of the flowers. The same was observed of the Grape Vine, Fig, and Mulberry. By Feb. 20 the Apricot trees were in full blossom, and by March 10 in full foliage, so that there was only an interval of four or five weeks between the fall of the old foliage and complete development of the new. The Apple and Plum behaved in a similar manner, the Pomegranate was a little later, the Fig next in order, and finally the Mulberry; whilst the same things, in the reverse sense, lost their leaves first. From the preceding notes it seems that the fall and renewal of the leaf is an essential constitutional peculiarity, which is modified by climatic conditions, but not entirely subject to them. A more striking illustration of this fact may be found in exotic deciduous trees planted in Egypt. Dr. Ascherson noted more particularly the summer fall of the leaves of *Poinsettia pulcherrima*, a South American shrub, and *Albizzia lebbek*, a native of the East Indies. The former is in the full splendour of its inflorescence in December, and quite leafless in April, remaining so, it is said, until the autumn. The *Albizzia* is extensively planted as an avenue tree. It sheds its foliage in April, but soon renews it. Both of these plants lose their leaves in their native countries during the dry, and renew them with the opening of the rainy season.

Poisoning Rats.—Will some one who has tried Messrs Rollisson's *Cantharikopho* for poisoning rats tell me if they got rid of the vermin? During this last month rats have found their way into one of our propagating houses, doing great damage. My employer bought me a shilling box of *Cantharikopho*, which I spread thickly on thin slices of bread, cut them into small pieces about 1 inch square, and placed them in and about the rats' holes. Instead of the *Cantharikopho* poisoning the rats, however, they appear to be very fond of it; they carried away the pieces in question as fast as they were laid down. Last Friday night I was fortunate enough to catch a large rat in a wire cage trap, and for three days I fed it with

bread thickly spread with *Cantharidopho*. I gave him water to drink, and at the end of the third day the rat was as lively as he was the day on which I caught him. In order to destroy him, ought I to have given him the box as well as the *Cantharidopho*? I think Messrs. Rollisson quite right in stating on the tin box that there is no bad smell from the dead bodies?—W. BALDERSTONE, *Tunbridge Wells*.

ADELER'S GRAPE VINE.

I HAVE not been very successful (says Max Adler in the *Danbury News*), with my experiments in Grape culture. I bought a Vine some time ago, and the man who sold the cutting to me, enjoined me to be careful to water it thoroughly every day. I did so but it didn't seem to thrive. One day I asked my neighbour, Pitman, what he thought was the matter with it, and when I mentioned that I watered it daily, he said, "Good gracious, Adler, that'd kill anyone! A Grape Vine don't want any artificial watering." Then he advised me to discontinue the process, and to wash the Vine with soap-suds, to kill the insects. My anxiety to know why it didn't thrive was relieved some time afterwards by over-hearing a man remark that "some men killed their Grape Vines by their stupid foolery in puttin' soap-suds on 'em." He said that all a Grape Vine wanted was to have the earth around it loosened now and then with a fork or spade. Then I began to dig around my Vine every morning. But one day, while engaged in this exercise, Cooley came and leaned over the fence, and said—"Adler, you'll kill that there Vine if you don't stop diggin' at it. Nothin' hurts a Vine wuss than disturbin' the soil around the roots. Now mind me, that Vine don't want nothin' but to be trained upon a trellis, an' fastened with wire." I ordered a trellis that afternoon, and tied tender shoots of the Vine to the cross pieces. The job cost me £5. On the following Tuesday I read in my horticultural paper that if a man wants to ruin a Grape Vine the quickest way is to tie it up with wire, as the oxidisation destroys the bark. So I took off the wire, and replaced it with string. I was talking about it to the man who came over to bleed my horse for the blind staggers, and he assured me that there was only one sure way to make a Grape Vine utterly worthless, and that was to run it up on a trellis. In France, he told me, the Vineyard owners all trained their Vines on poles, and that was the right way. So I got the axe, and knocked the trellis to pieces, and then fixed the Vine to a beam pole. Still it didn't thrive very well, and I asked a nurseryman near me to come and look at it. He said he couldn't come, but he knew what was the matter with the Vine as well as if he saw it. It wanted pruning. I ought to cut it down within 10 feet of the roots and manure it well. I did cut it down, and emptied a bag of guano over it; but as it seemed sort of slow, I insisted on the nurseryman coming over to examine it. He said that his fee was a sovereign in advance. I paid him and he came. He looked at the Vine a moment, then he smiled, and then he said—"By gum, Adler, that isn't a Grape Vine at all! It's a Virginia Creeper." So I have a kind of knocked off on Grape culture, and am paying more attention to my Cabbages.

The New Pelargonium Society.—I do not think that I shall join this society; it would be like sitting at a feast consisting of one dish without seasoning. If Mr. Barr's proposed society means to include everything outside the pale of Pelargoniums, its comprehensive character will secure my adhesion. Surely an enlightened floricultural public can tell when it sees or possesses a good Pelargonium, without the necessity of the certification of the fact by a society of raisers and growers, who can push their favourite productions before the world with scarcely the chance of contradiction or objection. One thing alarmed me very much in a recent article on the hybridisation of Geraniums; it was the information that a learned gentleman who has assisted in bringing a vast number of miserable, degenerate, and hideous Ferns into being, giving them corresponding names, has tried his hand at Pelargoniums with much the same result, decrepitude and misery being the apparent result. Is it not time that there should be a society for the prevention of cruelty to plants? The tendencies of communities of the present day is to establish societies for the relief of the afflicted; instead of doing anything to increase the development of that scarlet fever that has for so long a time afflicted gardens, would it not be better to institute a hospital garden for the rehabilitation of declining favourites? For such an establishment I should like to recommend the *Calceolaria*, a poor plant whose constitution has been sadly shaken by excesses; and the *Verbena* would also be a fit subject for such an institution. While on this floricultural topic, let me add a protest against the fashion of giving fancy flowers names that convey no idea or information; indeed, I trust, in many cases they are not meant to be descriptive, or poor Mrs. L., marked as rosy-purple,

might take exception to it, and if I were Mrs. G. I should not like to be put down amongst the purplish-crimsons; to be described as bluish-pink is not a recommendation for fair Miss S.; and stalwart Mr. H. may reasonably object to be placed amongst the bright scarlets. If this fashion goes on our catalogues will be a list of the names of county families. Let Mr. Barr go against this, as well as the Scarlet Fever Society, and many will join him.—WALTER IRVINE, *Birchwood*.

NOTES AND QUESTIONS.

[The following notes and questions came to hand, or were answered, too late for insertion in their several departments.]

King Koffee Savoy.—Through the kindness of Mr. Harrison, of Leicester, I am able to offer an opinion respecting this new Savoy. I have this day had it cooked, and it is certainly a very excellent variety, being mild, with a marrow-like taste, altogether well worth cultivating. Its small heads sit close to the ground; so dwarf is it, indeed, that it need not be planted farther apart than a foot each way.—R. GILBERT, *Burghley Gardens, Stamford*.

Wiring Fruit Walls: A. F. A good distance apart for Peaches and like fruits is from 5 to 6 inches, and for Pears and other trees trained horizontally, 10 inches. If the spur system of training the Peach were adopted, as in France, the wires need not be closer than 18 inches. For shoots trained vertically, sticks half-an-inch square will do, tied or wired to the horizontal wires. Ordinary Willow rods will answer the same purpose.

Planting Pear Trees.—I have a south wall, 80 feet long, to plant this season with Pear trees, and the varieties wanted are late ones. I have selected three kinds, viz., *Beurré Rance*, *Glou Morceau*, and *Bergamotte d'Espérance*. Now, if I plant what are called maidens, it will be five years before I get my fruit. I therefore wish to have the opinion of your readers on the method which I propose to follow, and which is, to buy pyramids, plant them 4 feet apart, close to the wall, and prune them by summer pinching instead of the knife. In this way I expect to get a crop the second year.—ENQUIRER.

Filbert Culture.—The Kentish mode is to train the plants up with a single stem of less than a foot in height, after which the branches are trained outwards by being tied to a wire or other hoop, so as to give the tree a basin-like form. All shoots rising from the centre are removed, very often by being pulled out in summer. The advantages of this basin shape are that it enables the sun to shine on the centre of the plant as well as on the sunny side of it, and a full-grown plantation of several acres may often be seen showing trees fully 15 feet in diameter, and not more than 5 feet high at the outside tips. Severe pruning is adopted, and all suckers are carefully removed. The small wood of the previous year's growth produces the fruit, and short spurs of these are only left in winter, all the gross shoots being entirely taken away.

Window Plants refusing to flower.—1. I have a plant in my drawing-room of *Daphne indica rubra*, which, although covered with flower buds, refuses to open them. It has plenty of light, and air, and warmth, and is regularly watered about twice a week. I cannot find an insect upon it, but the leaves insist upon turning yellow, and gradually dropping off dead. It is getting very bare. Is this the habit of the shrub? 2. I have also two plants of the white *Boronia*, covered with flower buds, they also remain closed, and refuse to come out. They have all the care and attention possible, but the leaves are shrivelling and drying up, and the plants seem in a fair way for death. They are also, with the *Daphne*, in the large bay window of my drawing-room?—H. B., *Woburn*.

Nominal Sizes and Comparative Capacities of Scotch and English Pots.—In emptying some Pine pots the other day, among which were several Scotch 10-inch pots—so-called and sold as such—I had the curiosity to measure their actual capacity compared with our 12-inch ones, made and in general use about here. The dimensions were as follows:—Scotch 10-inch pots, average width, 9½ inches; depth, 12½ inches. English 12-inch pots, average width, 10 inches; depth, 12 inches. These Scotch pots were made in Glasgow, and sent to me for 10-inch pots, and excellent pots they are; but, as regards capacity, it will be seen from the above figures that they are, as nearly as possible, equal to our 12-inch pots, and, of course, much larger than our 10-inch ones. In Scotland 10-inch pots were made after the pattern of the old perpendicular Hyacinth pots.—A. PINE GROWER.

Positions for the Jasmine-like Solanum.—Having seen *Solanum jasminoides* flourishing outside in a neighbour's garden in the south of England, and having obtained a nice young plant of it, I should be obliged by your informing me whether or not it will succeed in the Midland counties if planted in the open air, and, if not, in what position it succeeds best in a greenhouse or conservatory, together with the soil best suited for its culture.—AMATEUR. [Your plant might succeed out of doors, but the best position for it would be the back wall of a sunny greenhouse, conservatory, or corridor, where it would get its wood well ripened. It likes a good deep loamy soil, enriched with well-rotted dung or leaves, and plenty of water at the root when making its growth. It is rather subject to insect pests when grown indoors, and to prevent these making their appearance, syringe the plant now and then with clean rain water.]

Libonia. peurhosiensis.—This comparatively new Libonia is the result of a cross between the old *L. floribunda* and *Sericographis Ghiesbreghtiana*. It is deserving of extensive cultivation for late autumn and winter decoration, being of easy culture, and blooming at a time when flowers are not over plentiful. Cuttings of it put in early in spring strike readily; pot them in small 60-sized pots, and when these are full of roots pot on into 48's, putting a single stick to the main stem; place them in heat again till fairly established in the new soil, and grow them on all summer on shelves in a temperate house or close frame near the glass. Syringed daily, these will form beautiful, compact, natural, pyramidal plants by the end of September. If placed then in a house with a regular temperature of about 50°, they will commence flowering by the middle of October, and will continue in bloom for two months or more, forming objects of great beauty for the conservatory or dinner-table, and relieving the sameness of the usual *Chrysanthemum* display at that time of the year. The soil which it likes best is a mixture of tolerably rich loam, leaf mould, manure of equal parts, with a little sand. Although it is well to reduce the supply of water, with plenty of air to ripen the growth towards the end of September, it does not require that preparation and care that is necessary in the case of *L. floribunda*, and it is infinitely more beautiful, and quite as profuse in flowering as the best prepared plants of that variety could be.—W. S., *Birmingham*.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

EMBELLISHMENT OF GLASS-HOUSE WALLS.

IN many instances there is room for improvement in the treatment of the indoor wall surface of both plant and fruit-houses. Flowers and foliage for room and table decorations are always in demand, and the utilisation of unsightly bare walls under glass would doubtless tend to increase the supply. For covering the back or other walls of lofty cool conservatories, the *Camellia*, for striking and permanent effect, is unrivalled. I have often thought, when looking at the weedy character of the usual occupants of such walls, what a change would take place in a few years were they planted with a good selection of *Camellias*. It often happens that, in such positions, only a subdued light reaches the base of the wall, and most of the plants of a climbing or semi-climbing habit rush up to the top after the light, and the lower part of the wall is left bare, or, at least, only thinly covered. The *Camellia*, when planted out in a good border, will thrive and flower in a position, as regards light, where other plants (except, perhaps, the *Myrtle*) would only have a lingering existence. Of course, to cover a wall from 12 to 15 feet high with *Camellias* will take time; but every year they will gradually creep higher, and improve in appearance; and, when at last the wall is covered and the plants in flower, what a grand display will be the result! Even though scentless, the flowers are so brilliant and varied in colour, from the purest white to the darkest crimson, as to be altogether matchless. Where is the plant that will yield so much beauty for so many months in the year, and for so little trouble, as the *Camellia*? and, if the flowers are carefully mounted on wire, they will last a long time after being cut at this season of the year. I have a *Camellia*-covered wall in my mind's eye that I had charge of years ago, where flowers could be had in abundance from November till May—and such flowers—not like the small thin-petalled starlings often seen growing on plants in pots. There is no question, I think, that *Camellias*, planted out in a good border, produce the finest flowers; and, although the bush form is the natural habit of the plant, yet, if planted out in a young state against a wall, it submits to training as readily as any climbing evergreen; and, if early, medium, and late-flowering varieties are selected, flowers in abundance may be obtained from a wall for at least six months in the year, and that, too, at a time when flowers are most valuable. There is, I know, in most places, a demand for flowering plants of a manageable size in pots; and *Camellias*, to meet that want, must always, to a certain extent, be grown in pots; but that need not preclude those who have bare walls in not over-light situations from planting them with *Camellias*, for the sake of their beautiful flowers, for cutting for room decoration, and for the charm imparted to a cool conservatory by having such a wealth of glossy foliage and bright flowers as a background. In planting out *Camellias*, and hard-wooded plants generally, deep planting should especially be guarded against; for, in making new borders that will, for the most part, be composed of fibrous materials, decomposition and settling will go on for years, and the plants gradually, but almost imperceptibly, subside. When this takes place, the proper remedy is to lift the plants, make up the border, and re-plant, when no harm will follow; but I have met with instances where the borders had been gradually made up with fresh soil, without lifting the plants, and the accumulation of soil round their collar brought on a sickly unhealthy appearance, which was speedily followed by death; and, doubtless, some cause other than the true one was assigned for the disaster. I do not think, as regards soil, there is anything better for *Camellias* (if permanent effect is aimed at) than a rich, turfy, rather sandy, loam. If at all adhesive when the fibre in it decays, it will probably become too close and heavy, and although *Camellias* enjoy abundant supplies of water, still, anything in the shape of stagnation at the roots must be avoided; therefore, if the loam is at all heavy, peat, or thoroughly decayed leaf mould, with a

proportion of sand, and lumps of charcoal to increase its porosity should be added, but, in using leaf mould, unless care is used to have none but what is thoroughly decayed, *Fungus* may be introduced amongst the roots that may be productive of serious injury to the plants. I have also, on several occasions, seen the same result follow the use of peat, in which very small particles of the rhizomes of the common Brake Fern, or little bits of the root of the common Heath, had been left in the soil. Therefore, for making *Camellia* borders, if good loam can be obtained which does not contain lime beyond the small average amount usually found in all soils, I should recommend its use in preference to composts of all kinds, and trust to liquid manures, and especially that made from soot, to give strength and vigour when required. As wall or pillar plants for a cool house *Myrtles* might be more extensively used than they are; when planted out they grow rapidly, and their sweet white flowers are exceedingly beautiful. Sprays of glossy-leaved sweet-scented *Myrtle* are very desirable for mixing with cut flowers either in the drawing-room vase or in bouquet making. *Habrothamnus fascicularis* and *elegans* are free-growing and free-flowering plants, of semi-climbing habit, well adapted for covering walls, pillars, or arches in a cool conservatory, as is also the *Cytisus racemosus*, which, when planted in a border of loam, assumes an almost perpetual flowering habit. Many other plants might be mentioned, such as *Magnolia fuscata*, which, although of slow growth, makes rather a desirable wall plant, especially for low walls. In a rather dark shady corner, *Clanthus puniceus* would be at home, as it is rather subject to attacks of red spider when the sun shines full upon it. *Abutilon Thompsoni* makes a grand wall plant, growing as freely as its parent, the old *Striatum*. I may say, several years ago, I obtained seedlings from this identical with *Striatum*, and so I suppose *Thompsoni* to be a variegated sport from that old variety. In warm light houses, few things can equal the *Luculia gratissima* for covering walls. The *Heliotrope*, also, is a good subject for a light position, as, by judicious pruning back, it may be in bloom at any season of the year. I once had a wall covered with it, that I always cut back in July to get a new flowering growth for autumn and winter. *Fuchsias*, also, when planted out and pruned back in July, will make a new growth and bloom beautifully through the autumn and winter months. *Fuchsias*, however, attain their greatest perfection when trained along the tie-rods supporting the roof, as then they entirely hide their supports, and produce a wondrous wealth of gracefully-drooping floral beauty, that must be seen to be adequately appreciated. Oranges and Lemons—in fact all the *Citrus* family—do well in loam and planted against a wall, in a warm house, and I have seen good crops of, at least, useful fruit produced in this way. These should, however, be planted out when young, and when the branches are pliable, so as to be easily got into shape, without having recourse to strong ligatures, which would have a tendency to check the proper circulation of the sap. There are various ways of clothing the back walls of Ferneries and stoves with Ferns and fine foliage and creeping plants; and, when so treated, a large collection of plants may be grown in an interesting manner in a comparatively small space. Supposing it is desired to cover a wall—at the back of a Fernery, for instance—in which case I will assume the house to have a span-roof running east and west, the back wall being, perhaps, 6 or 8 feet high, and, of course, on the north side. I am only supposing this height, as for my purpose it does not matter whether it is more or less. The wall, in the hottest part, at least, of the day, would be shaded, and would, in consequence, be the dampest shadiest position in the house, eminently suited for flower culture. One mode of planting such a wall would be as follows:—Run parallel wires, tightly strained, 6 inches from the wall, and the same distance apart, to form a support for Moss, Ferns, and soil, which should be principally composed of peat, with some charcoal and pieces of freestone intermixed. I think I need scarcely enter into details, as a small amount of ingenuity, when accompanied by taste, will plant the surface of such a wall with Ferns, Club Mosses, &c., so as to produce a charming effect with the surface neatly Mossed over. *Begonias* of the variegated section might also be introduced with *Fittonias*, *Eranthemums*, *Sonerila margaritacea*, *Cissus*

discolor, and *Panicum variegatum*, but the stove plants, of course, would only be introduced into a tropical Fernery. Another way of making a Fern wall may be just briefly glanced at; and, as this will be a more elaborate affair, it will consequently be more expensive. In the first place call in the bricklayer, and have a series of small brick arches run all along the base of the wall. On the first series, run a second just a little narrower, and on the second a third, and so on till the top of the wall is reached, the arches gradually decreasing in size, so as to be narrowest at the top. If the arches are one brick thick, that will be quite strong enough. It is not necessary that the arches, in any one series, should be all alike, as, if diversity of outline is sought for, it may be obtained by varying the size. This system of brick arches will form the base or foundation of the structure, and may be dressed in any shape desired, leaving plenty of pockets to hold soil to grow Ferns and other plants. The mode of dressing and hiding the brick-work is altogether a matter of taste, and may be done either with virgin cork, or spar, or red sandstone, worked up with cement, avoiding as much as possible all formality. Of course, all the brick-work will be covered with whatever material it is decided to use, as the main object of using brick arches at all is to make sure of a supply of moisture and soil. I believe a good case might be made out for the extended cultivation of Oranges, Lemons, Guavas, Cape Gooseberries, &c., on the back walls of Vineries and other fruit houses; but in all cases where the walls are used in this way they should be well painted and wired for training, and once a year, usually at this season, the plants should be unfastened from the wall, which should be washed with a solution of soft-soap, or some other insecticide, to keep down insects.

E. HOBDAV.

THE BEST WINTER-BLOOMING LÆLIAS.

Most of the plants of this genus are beautiful, but I find *L. autumnalis* and *L. anceps* the best for the supply of cut flowers, a purpose for which they should be grown in every plant-stove. *L. autumnalis* grows well on a block, and does not like much shade, indeed a Vinery suits it admirably when growing, the partial shade afforded by the Vine leaves being amply sufficient. *L. anceps* grows well in a peaty compost, and a broad pan is best, as more space is thus afforded for its creeping rhizomes. It also affects a more shady and moisture-laden atmosphere. One of the great essentials to the welfare and vigour of all the winter-flowering Lælias is a free circulation of air, both by day and night, during summer and during mild bright weather in winter. Their flowers will also be found to keep fresh much longer in an airy atmosphere. I have two large masses of *L. autumnalis* now in bloom, one with ten and the other with fourteen strong spikes, and I consider it one of the most beautiful of all winter flowers. Its soft rosy-lilac white-throated blossoms are invaluable for bouquets, and look almost blue when contrasted with orange-yellows, but with white Bourvardias, Jasmine, Stephanotis, Tuberoses, and pale yellow or salmon-tinted Tea Roses, they have a fine effect. Seen under artificial light they look very striking, the cellular tissues of each segment glistening like hundreds of tiny little brilliants set in the softest and most delicate rosy coral. Cut spikes last three weeks or even longer in the drawing-room vases. I have three large pans of *L. anceps* (an Orchid which every beginner in Orchid culture should try his hand at, and the result is sure to please him), and these collectively bear forty-six spikes, most of which are producing three and some four flowers each. The flowers are large and of more decided colours than the last-named, but for cutting they are very useful, and are equally permanent when cut. The rich velvety crimson of the tip, contrasted by a broad streak of the richest golden-yellow, is particularly beautiful. The five plants I have mentioned form the gems of my collection, and I think all the more highly of them because I grow them in Vineries most of the year, and shift them to a tiny little plant-stove when in flower. I have also plants of the creamy-white flowered *L. alba* and the broad-petalled lilac-flowered *L. furfuracea*; these, however, although worth adding to a general collection, do not flower freely enough to merit general cultivation, where, as, in my case, space is limited. I had a large plant of *L. superbiens*, which for years only bore one solitary flower-spike, I, therefore, discarded it, thinking that I might apply the room which it occupied to better purpose. *L. acuminata* is another very pretty species, bearing a spike of snowy white flowers, the most distinctive feature being a deep purplish-crimson blotch in the centre of the lip.

J. G. H.

NOTES OF THE WEEK.

— ADVERTING to some expeditions he made during the year, Baron Mueller, in a recent report, alludes to specimens of *Eucalyptus amygdalina*, 400 feet in height, as also to *Festuca dives*, a stately Grass, often 12 to 17 feet in height, growing in Fern-tree gullies. Let us hope this may prove a worthy addition to the Pampas and the New Zealand *Arundo conspicua*.

— MR. TYERMAN, writing to us from Cornwall, states that he has *Grevillea rosmarinifolia* beautifully in flower in the open borders, and adds that it is worthy of a prominent position in all moderately mild situations. *Fagelia bituminosa* has also proved itself to be quite hardy in Cornwall, and retains its leaves well during winter, a fact worth knowing, as few more interesting plants are to be found amongst climbing Leguminosæ.

— AMERICAN CRANBERRIES, of great size and highly coloured, now find their way into our markets, and may be seen exposed for sale in the shops of provincial fruiterers. Their cultivation is particularly attended to in America.

— ON more than one occasion we have alluded to the large-flowered silvery-white Immortelles, used so largely by the Covent Garden florists in the manufacture of wreaths and other ornamental designs. It appears to be a distinct form of *Helichrysum*, far superior to any now in cultivation in Europe.

— A PROPOSITION has, we learn, been set on foot by Sir Robert Christison with a view to adding 20 acres to the Edinburgh Botanic Garden, for the purpose of an arboretum, where the cultivation of our ordinary forest trees, the conditions of success, the causes of failure, diseases, their prevention and cure, might be conveniently and advantageously studied.

— A PORTION of Tooting Common is to be immediately converted into a public park and recreation ground, the claims as to the rights of pasturage and other privileges having been settled. The manorial rights, too, have been purchased and made over to the Metropolitan Board of Works as conservators, and that body will at once proceed to lay out the ground as a park, which it is expected will be opened to the public in spring or early next summer.

— THE council of the Society for the Promotion of Scientific Industry, the head-quarters of which are at Manchester, has decided to give gold, silver, and bronze medals, for excellence and novelty in the various classes of exhibits at the exhibition of implements, machines, and appliances for economising labour, which is to take place in Manchester in 1875. The arrangements for the exhibition are progressing satisfactorily, and space has been secured by many high-class engineering and other firms.

— WE have just seen some charming flowers, sent from one of Messrs. Piesse & Lubin's flower farms near Nice. These consist of Camellias, Tea Roses, Neapolitan Violets, Mignonette, Orange blossom, and other kinds, which, notwithstanding the long journey to which they had been subjected, arrived in London as fresh as if only just cut from the plants. On these sunny farms whole acres are devoted to the culture of sweet-scented flowers of various kinds, from which the odours and essences now so popular are obtained.

— AS is usual about Christmas time the exhibition of choice fruit in Covent Garden has been a very interesting one. Pines, both imported and of home growth, have been excellent as have also been Grapes, especially Muscats of English growth. Among Apples have been very fine specimens of Reinette du Canada and Calville Blanche, two excellent kinds more largely grown on the Continent, and in the Channel Islands, than with us. Easter Beurré Pears have been plentiful, and specimens of Uvedale's St. Germain (Belle de Jersey) have been, if possible, finer this year than usual; they are, however, useless for dessert purposes.

— LILIU NEILGHERRICUM, first brought into notice by Messrs. Veitch, but which has been lost sight of for some years, has just been re-introduced by the Colchester Bulb Company. In Dr. Wallace's "Notes on Lilies" (p. 51), it is thus described:—"Gathered in the Neilgherries, in the neighbourhood of Ootacamund, at an elevation of about 8,000 feet, by Dr. Wight, Gardner, Thomson, and many other botanists; and northward, in the Mysore territory, by Mr. T. Lobb. The range of form, which it presents, may be seen in Dr. Wight's three figures. It is quite as variable as the Japanese—Chinese sub-species—and though such a striking form, has been almost entirely neglected by cultivators." The Colchester Company state that, in form, it is similar to *L. longiflorum*; that the flowers have the same substance as those of *L. Brownii*, and that in colour they vary from white to yellow. They mention that it is a difficult Lily to obtain; they have only received a few bulbs of it, and expect no more this season.

— THE word "Pines" was inserted by mistake instead of Planes in our notice of Bedford Square last week.

THE FLOWER GARDEN.

ARUNDO CONSPICUA IN HEREFORDSHIRE.

THE plant, of which the accompanying illustration is a representation, is about five years old. It was planted in a shrubbery border in 1869. For the first two or three years after it was planted it grew rapidly, but produced only a few weakly flower-stems; afterwards, however, when it had established itself and had formed into a large mass, it commenced blooming much earlier, and produced from fifty to sixty flower stems, which lasted in perfection at least three months. Several large plants of this reed may now be seen in the King's Acre Nurseries; the soil in which they are growing is the stiff retentive loam in which Roses delight. They have never received any manure, and the plants are left undisturbed; for, when moved, it is found that they do not flower in the same luxuriant manner for several years afterwards. The Arundo generally commences blooming early in July, and lasts until the end of October. The Pampas rarely comes out in full flower before November; the Arundo, therefore, while as beautiful when well grown, has a peculiar value in being so early. We are indebted to Mr. Cranston for a photograph of this plant.

NEW TYPE OF PELARGONIUM.

ALL who have taken up the cultivation of the Pelargonium are acquainted with the hybrids produced between the Ivy-leaved and Zonal kinds obtained in England by Mr. Wills and Mr. Grieve. They are aware also that these hybrids appear to support the theory of certain cultivators, inasmuch as those kinds, of which we have any knowledge, and particularly Willsii, Willsii rosea, Emperor, and Dolly Varden, are sterile, and this is all the more to be regretted, because they are superior to *P. peltatum* and *lateripes*, by reason of their great vigour and abundant inflorescence. Pelargonium raisers will therefore learn with pleasure that a plant of this class has been found in the neighbourhood of Nice, which produces seed in abundance. From what has been stated concerning it, I gather that it was found in a garden near Nice in a border in which were the pale lilac-flowered Ivy-leaf, and the rose, white, and scarlet-flowered Zonals. From what I can judge from the leaves and flowers I have received, it is certainly a hybrid between these two sections, but, bearing a greater general resemblance to the Ivy-leaf than to a Zonal, as it is decumbent; on the other hand the leaves are more like those of a Zonal than the hybrids obtained in England. The flowers are of a very brilliant red, and number from fifteen to twenty upon one umbel. The Zonals have, therefore, had much to do with the fertilisation. What the seed-bearing plant is we know not, and perhaps never shall. It is in the hands of Mr. Charles Haller, of Nice, who will have it for sale in March under the name (an erroneous one, I think) of *Geranium pseudo zonale*. It is an interesting plant to all engaged in hybridising, for, with all due respect to certain theorists, who can say what will come of it? F.

DO VARIETIES WEAR OUT, OR TEND TO WEAR OUT?

By Prof. ASA GRAY.*

THIS question has been argued from time to time for more than half a century, and is far from being settled yet. Indeed, it is not to be settled either way so easily as is sometimes thought. The result of a prolonged and rather lively discussion of the topic about forty years ago in England, in which Lindley bore a leading part on the negative side, was, if we rightly remember, that the nays had the

* In *New York Tribune*.

best of the argument. The deniers could fairly well explain away the facts adduced by the other side, and evade the force of the reasons then assigned to prove that varieties were bound to die out in the course of time. But if the case were fully re-argued now, it is by no means certain that the nays would win it. The most they could expect would be the Scotch verdict, "not proven." And this not because much, if any, additional evidence of the actual wearing out of any variety has turned up since, but because a presumption has been raised under which the evidence would take a bias the other way. There is now in the minds of scientific men some reason to expect that certain varieties would die out in the long run, and this might have an important influence upon the interpretation of the facts that would be brought forward. Curiously enough, however, the recent discussions to which our attention has been called seem, on both sides, to have overlooked this matter. But, first of all, the question needs to be more specifically stated, if any good is to come from a discussion of it. There are varieties and varieties. They may, some of them, disappear or deteriorate, but yet not wear out—not come to an end from any inherent cause. One might even say, the younger they are the less the

chance of survival unless well cared for. They may be smothered out by the adverse force of mere superior numbers; they are even more likely to be bred out of existence by unprevented cross-fertilisation, or to disappear from mere change of fashion. The question, however, is not so much about reversion to an ancestral state or the falling off of a high-bred stock into an inferior condition. Of such cases it is enough to say that when a variety or strain, of animal or vegetable, is led up to unusual fecundity, or size, or product of any organ, for our good, and not for the good of the plant or animal itself, it can be kept so only by high feeding and exceptionable care; and that with high feeding and artificial appliances, come vastly increased liability to disease, which may practically annihilate the race. But then the race, like the burst boiler, could not be said to wear out, while if left to ordinary conditions, and the race allowed to degenerate back into a more natural, if less useful, state, its hold on life would evidently be increased rather than diminished. As to natural varieties or races under normal conditions, sexually propagated, it could readily be shown that they are neither more nor less likely to disappear from any inherent cause than the species from which they originated. Whether species wear out, *i.e.*, have their

rise, culmination, and decline from any inherent cause, is wholly a geological and very speculative problem, upon which, indeed, only vague conjectures can be offered. The matter actually under discussion concerns cultivated or domesticated varieties only, and, as to plants, is covered by two questions.

First, will races propagated by seed, being so fixed that they come true to seed, and purely bred (not crossed with any other sort), continue so indefinitely, or will they run out in time—not die out, perhaps, but lose their distinguishing characters? Upon this, all we are able to say is that we know no reason why they should wear out or deteriorate from any inherent cause. The transient existence or the deterioration and disappearance of many such races are sufficiently accounted for otherwise. As in the case of extraordinarily exuberant varieties, such as mammoth fruits or roots, by increased liability to disease, already adverted to, or by the failure of the high feeding they demand. A common cause, in ordinary cases, is cross-breeding, through the agency of wind or insects, which is difficult to guard against. Or they go out of fashion and are superseded by others thought to be better, and so the old ones disappear. Or, finally, they may revert to an ancestral form. As offspring tends to resemble grand-parents almost as much as parents, and as a line of close-bred ancestry is generally prepotent, so newly



Arundo conspicua in the King's Acre Nurseries, Hereford.

originated varieties have always a tendency to reversion. This is pretty sure to show itself in some of the progeny of the earlier generations, and the breeder has to guard against it by rigid selection. But the older the variety is—that is, the longer the series of generations in which it has come true from seed—the less the chance of reversion; for now, to be like the immediate parents, is also to be like a long line of ancestry; and so all the influences concerned—that is, both parental and ancestral heritability—pull in one and the same direction. So, since the older a race is, the more reason it has to continue true, the presumption of the unlimited permanence of old races is very strong. Of course, the race itself may give off new varieties; but that is no interference with the vitality of the original stock. If some of the new varieties supplant the old, that will not be because the unvaried stock is worn out or decrepit with age, but because in wild Nature the newer forms are better adapted to the surroundings, or, under man's care, better adapted to his wants or fancies.

The second question, and the one upon which the discussion about the wearing out of varieties generally turns, is, Will varieties propagated from buds, *i.e.*, by division, grafts, bulbs, tubers, and the like, necessarily deteriorate and die out? First, do they die out as a matter of fact? Upon this the testimony has all along been conflicting. Andrew Knight was sure that they do, and there could hardly be a more trustworthy witness. "The fact," he says, fifty years ago, "that certain varieties of some species of fruit which have been long cultivated cannot now be made to grow in the same soils and under the same mode of management, which was a century ago perfectly successful, is placed beyond the reach of controversy. Every experiment which seemed to afford the slightest prospect of success was tried by myself and others to propagate the old varieties of the Apple and Pear which formerly constituted the orchards of Herefordshire, without a single healthy or efficient tree having been obtained; and I believe all attempts to propagate these varieties have, during some years, wholly ceased to be made." To this it was replied, in that and the next generation, that cultivated Vines have been transmitted by perpetual divisions from the time of the Romans, and that several of the sorts, still prized and prolific, are well identified, among them the ancient Græcula, considered to be the modern Corinth or Currant Grape, which has immemorially been seedless; that the old Nonpareil Apple was known in the time of Queen Elizabeth; that the White Beurré Pears of France have been propagated from the earliest times; and that Golden Pippins, St. Michael Pears, and others said to have run out, were still to be had in good condition.

Coming down to the present year, a glance through the proceedings of pomological societies, and the debates of farmers' clubs, brings out the same difference of opinion. The testimony is nearly equally divided. Perhaps the larger number speak of the deterioration and failure of particular old sorts; but where the question turns on "wearing out," the positive evidence of vigorous trees and sound fruits is the most telling. A little positive testimony outweighs a good deal of negative. This cannot readily be explained away, while the failures may be, by exhaustion of soil, incoming of disease, or alteration of climate or circumstances. On the other hand, it may be urged that, if a variety of this sort is fated to become decrepit and die out, it is not bound to die out all at once, and everywhere at the same time. It would be expected first to give way wherever it is weakest, from whatever cause. This consideration has an important bearing upon the final question; are old varieties of this kind on the way to die out on account of their age or any inherent limit of vitality? Here, again, Mr. Knight took an extreme view. In his essay in the "Philosophical Transactions," published in the year 1810, he propounded the theory not merely of a natural limit to varieties from grafts and cuttings, but even that they would not survive the natural term of the life of the seedling tree from which they were originally taken. Whatever may have been his view of the natural term of the life of a tree, and of a cutting being merely a part of the individual that produced it, there is no doubt that he laid himself open to the effective replies which were made from all sides at the time, and have lost none of their force since. Weeping Willows, Bread-fruits, Bananas, Sugar-cane, Tiger Lilies, Jerusalem Artichokes, and the like, have been propagated for a long while in this way, without evident decadence. Moreover, the analogy upon which his hypothesis is founded will not hold. Whether or not one adopts the present writer's conception that individuality is not actually reached or maintained in the vegetable world, it is clear enough that a common plant or tree is not an individual in the sense that a horse or man, or any one of the higher animals is, that it is an individual only in the sense that a branching zoophyte or mass of coral is. *Solvitur crescendo*: the tree and the branch equally demonstrate that they are not individuals, by being divided with impunity and advantage, with no loss of life, but much increase. It looks odd enough to see a writer like Mr. Sisley re-producing the old

hypothesis in so bare a form as this. "I am prepared to maintain that varieties are individuals, and that as they are born they must die, like all other individuals." "We know that Oaks, Sequoias, and other trees live several centuries, but how many we do not exactly know. But that they must die, no one in his senses will dispute." Now, what people in their senses do dispute is, not that the tree will die, but that other trees, established from cuttings of it, will die with it. But does it follow from all this that non-sexually propagated varieties are endowed with the same power of unlimited duration that are possessed by varieties and species propagated sexually—*i.e.*, by seed? Those who think so jump too soon at their conclusion. For, as to the facts, it is not enough to point out the diseases or the trouble in the soil or the atmosphere to which certain old fruits are succumbing, nor to prove that a parasitic fungus (*Peronospora infestans*) is what is the matter with Potatoes. For how else would constitutional debility, if such there be, more naturally manifest itself than in such increased liability or diminished resistance to such attacks? And if you say that, anyhow, such varieties do not die of old age—meaning that each individual attacked does not die of old age, but of manifest disease—it may be asked in return, what individual man ever dies of old age in any other sense than of a similar inability to resist invasions which in earlier years would have produced no noticeable effect? Aged people die of a slight cold or a slight accident; but the inevitable weakness that attends old age is what makes these slight attacks fatal. Finally, there is a philosophical argument which tells strongly for some limitation of the duration of non-sexually-propagated forms, one that probably Knight never thought of, but which we should not have expected recent writers to overlook. When Mr. Darwin announced the principle that cross-fertilisation between the individuals of a species is the plan of Nature, and is practically so universal that it fairly sustains, his inference, that no hermaphrodite species continually self-fertilised would continue to exist, he made it clear to all who apprehend and receive the principle that a series of plants propagated by buds only must have a weaker hold of life than a series reproduced by seed, for the former is the closest possible kind of close breeding. Upon this ground such varieties may be expected ultimately to die out; but "the mills of the gods grind so exceedingly slow," that we cannot say that any particular grist has been actually ground out under human observation. If it be asked how the asserted principle is proved or made probable, we can here merely say that the proof is wholly inferential. But the inference is drawn from such a vast array of facts, that it is well nigh irresistible. It is the legitimate explanation of those arrangements in Nature to secure cross-fertilisation in the species, either constantly or occasionally, which are so general, so varied and diverse, and, we may add, so exquisite and wonderful, that, once propounded, we see that it must be true. What else, indeed, is the meaning and use of sexual reproduction? Not simply increase in numbers, for that is otherwise effectually provided for by budding propagation in plants and many of the lower animals. There are plants, indeed, of the lower sort, in which the whole multiplication takes place in this way, and with great rapidity. These also have sexual reproduction; but in it two old individuals are always destroyed to make a single new one. Here propagation diminishes the number of individuals 50 per cent. Who can suppose that such a process as this, and that all the exquisite arrangements for cross-fertilisation in hermaphrodite plants, do not subserve some important purpose? How and why the union of two organisms, or generally of two very minute portions of them, should reinforce vitality we do not know and can hardly conjecture. But this must be the meaning of sexual reproduction.

The conclusion of the matter from the scientific point of view is that sexually-propagated varieties or races, although liable to disappear through change, need not be expected to wear out, and there is no proof that they do; also, that non-sexually propagated varieties, though not liable to change, may theoretically be expected to wear out, but to be a very long time about it.

Layering Wistarias.—Late last spring I layered several long slender shoots which had sprung up from the base of an old plant in my garden. To-day I dug them up, and find that every portion of the Vine covered in the ground is well furnished with roots. The result of a half-hour spent in layering is at least two dozen strong plants. I only mention the fact to encourage others in doing likewise whenever an opportunity presents. The Wistarias are all elegant climbing shrubs, some of them natives of America and others of China. The flowers are Pea-shape, and produced in long drooping clusters. The Chinese varieties bloom very early in spring, before the leaves appear, while the American sorts come on later; therefore, by cultivating both we prolong the season, besides

securing a greater variety of colours. The Chinese varieties are more showy than the American. There are sorts of the former with bluish-purple flowers, another which is pure white, and a new variety, lately introduced, with double flowers. There is also an American variety with white flowers, besides the more common purple and pale-lilac sorts. Any branch or slender shoot will strike root freely if covered with earth; and after one gets a stock plant others may be produced, by layering, to an almost unlimited extent. They are grand plants, and should become more common throughout the country.—*Moore's Rural*.

A NEW HARDY CLIMBER.

(MAXIMOWICZIA SINENSIS.)

AMONG novelties contained in seed catalogues of the present season, this plant is worth notice. It comes from the banks of the Amur, and is perfectly hardy. Judging from dried specimens and a coloured sketch of the fruit now before us, it is likely to become a favourite with all interested in ornamental fruited plants. The flowers, which are borne in axillary clusters, are greenish or creamy-white in colour,



Maximowiczia sinensis.

not at all ornamental; but they are succeeded by bright red or crimson Pear-shaped fruits, as shown in our illustration. The ovate serrate foliage is of a shining green colour, and contrasts well with the glossy fruit. The plant has been introduced to European gardens by M. Otto Putz, to whom we are indebted for the above description.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hepaticas: Mrs. N. O. These grow best in rich peat or other light soil, and a somewhat shady and sheltered position; but they will also succeed in any good garden soil, and in more exposed positions, provided it be not too hot and dry. *H. angulosa* will thrive perfectly in sandy moist soil in a shrubbery of young trees.

Plants for Shady Situations.—Will a Clematis succeed on a very dry and shady rookery in peaty soil? Ferns will not do there, as it is too dry. If you do not think a Clematis will do, please suggest something else.—E. L. J. [There is no plant that enjoys sunshine and light more than the Clematis, and I do not think it would flower in the situation described. Perhaps some of the finest ornamental varieties of the Ivy would be the best plants with which to cover such a rookery, for their spreading roots would soon find moisture enough to keep them growing. Ferns do best in the shade, and might be made to grow with frequent artificial waterings, some strong loam being added to the peat to retain the moisture.—W. T.]

Californian Lilies.—For several years we have been purchasing California and Oregon Lilies, and must now have from five to ten thousand. We have never dared offer one for sale, because we did not know what to name or how to describe them. We have obtained half a dozen varieties under one name, and half a dozen names to bulbs that were all alike. In our necessity, we wrote to Henry A. Bolander, Esq., Superintendent of Public Instruction, and connected with the Geological Survey of the State of California as botanist, and from him we learn that this confusion of names is not accidental, but designed, and for the purpose of fraud, and that "there are but four species of Lilies in this wide western coast. It is true they vary, but in no case sufficient to warrant a new name; in no case is a reliable distinction to be made."—*Vick's Guide*.

THE KITCHEN GARDEN.

ONIONS IN LONDON MARKET GARDENS.

WHERE this crop thrives well it is a very remunerative one, and about London it is grown to perfection in fields, sown broadcast. To those who are accustomed to grow Onions in beds and in lines, this plan may seem antiquated, but those who object to it have only to take a walk in July or August through the Fulham, Chiswick, Deptford, Woolwich, or Mitcham market-gardens to be convinced of its utility. The varieties of Onions grown in these localities are mostly the Reading, Deptford, white Tripoli, and Lisbon. The Reading or white Spanish, as it is commonly called, is a large, somewhat flat, and pale-skinned Onion, having a mild flavour, but it is not a good keeper; consequently it is largely sown in spring for affording a supply between Midsummer and Christmas. The Deptford is one of the best Onions that can be grown, and, as it keeps well, it is largely sown in spring for yielding a supply of ripe bulbs in the succeeding winter. Its skin is of a brown colour, flesh firm, flavour strong, and its keeping qualities almost better than those of any other sort. In shape it varies from flat to globular. The Lisbon and white Tripoli are sown in August for spring use, when, on account of their long white necks, they are much preferred to any other sort; and whatever portion remains unsold in spring is transplanted, when they yield large soft bulbs for immediate use. Of the silver-skinned, considerable quantities are grown in the neighbourhood of Sandy, in Bedfordshire, for pickling purposes. The main spring sowing is made of the Deptford and Reading Onions as soon after the middle of February as the condition of the soil and weather permits. If the seed be really good, Mr. Myatt, of Deptford, informs me that when he sows broadcast he uses 9 lbs. to the acre. If they were sown in lines he would only use 8 lbs. to the acre, but the additional pound in the broadcast sowing he considers well spent in the amount of labour saved over that expended in sowing in lines. Considering the regular distances at which broadcast Onions stand apart all over the field, the produce is more than from a field of Onions sown in beds or in lines. I therefore consider broadcast sowing the best for market purposes. The soil for Onions is made rich and is well pulverised, and is, if possible, that which has been trenched and laid up in ridges during the winter. In February, as soon as the ground is in good workable condition, break up freely; the ridges into which it was thrown in winter are levelled, and the whole surface is firmly trampled or rolled. The seed is then sown and raked in, and all is finished by another rolling. Nothing is placed in the ground in the way of a catch crop from the time of sowing to that of harvesting; indeed, Onions are one of the few crops that are the sole occupiers of the ground during the whole period of their growth. The seed takes a considerable time to germinate; but if the ground is clean and well tilled, weeds will not appear much sooner than the Onions, or at least not so thickly as to choke them. As soon as the Onions have fairly come up, however, women or men, accustomed to Onion cleaning, are set to work amongst them. These operators are furnished with the short-handled 2½-inch wide hoes, with which they hoe down the weeds and thin the crop with wonderful certainty and expedition. The field is marked off into strips for the guidance of the hoers, to each one of whom there is a space of a couple of yards given, so that were four cleaners employed the strips would each be 8 yards wide. People accustomed to this work do not trample carelessly about; nor, indeed, can the crop be damaged materially by doing so, for the Onions that are thus prostrate to-day are nearly erect to-morrow. Each plantation is generally cleaned by this means three times during the season, the last cleaning being made about the end of June or early in July, and any big weeds that appear after that time are pulled out by the hand. As fine a crop of Onions as I have seen was in a field near the left bank of the Thames, in the gardens of Mr. Jessop, at Chiswick. Mr. Abernath, of Mitcham, informs me that in a field of Onions he had two years ago, the produce was about 16 tons to the acre, and he got £12 for each ton, thus realising a gross sum of £192 per acre; but when labour, manure, and rent, are deducted from this, the net sum would be much less. Mr. Bagley, of Turnham Green, had a splendid crop of Onions, large and equal, and these he sold on the ground as they stood to a greengrocer, who harvested them himself in the end of August, for £40 per acre. This price is a much more likely sum than that in the preceding case, for which I have only the grower's word. Towards the end of August or early in September, the Onions, being ripe, are harvested when dry. Those that are green and thick-necked are laid aside for immediate sale, but the firm and sound bulbs, particularly of the Deptford kind, are either cleaned of any loose scaly skins and spread out a few inches deep over the floor of a loft, or tied into bunches and strung in twos over poles or on pegs in a loft or shed, so that they can be marketed at any convenient season during the winter and spring. The autumn

sowing is made on ground cleared of Cauliflowers, Cabbages, or other early crops. The first sowing, consisting of the white Spanish, white Tripoli, or Lisbon, is made in the last week of July, for drawing in a young state from September onwards, but the main sowing is not made till about August 25. The autumn sowings are always made in beds about 5 feet wide, with 1 foot alleys between them, and the seeds are covered deeper than those of the spring sowings. Autumn sowings of Onions are never made broadcast on fields, as they must be weeded, not hoed, in the process of cleaning. The hoeing would thin them too much; as they are only required for drawing when young, they do not need to be more than one-third of the distance asunder required in the case of the summer Onions. They are weeded soon after they come up, and once, or perhaps twice, during the winter time. Weeding is performed by women in dry weather, each of whom takes a small round basket to put the weeds into rather than throw them on the alleys. In marketing these Onions they are cleared off the beds in large patches, and not by picking out the strongest and leaving the weakest, as is generally done, and they are washed, which makes their long white necks look clean and inviting. If a portion be intended for transplanting, a piece of well-prepared rich ground is made ready for them, rolled firmly, and lined off into rows about 9 inches apart, and into these lines the young plants are dibbled about 6 inches apart. W. F.

WINTER SPINACH.

SPINACH is largely grown in most gardens for autumn, winter, and spring use, but it is not cultivated for market purposes in summer, owing to its liability to "run" almost as soon as the seed has germinated. The round-leaved sort is that which is used for spring sowings, the first of which is made in February, a second about the 1st of March, and another sowing or two at an interval of three weeks or thereabouts, just as empty space and convenience permit. Spaces under trees are often covered with Spinach sown broadcast, and, as the trees are not furnished with leaves, they do not shade the plants. Open fields are also often sown with Spinach in beds, which are covered by throwing soil over them from the alleys; on these beds Cauliflowers are also planted, at the usual distances apart. By the time the Spinach has come well up the Cauliflowers will have become nicely established, so that the Spinach, which, as soon as ready, is removed for market, does not injure the Cauliflowers much. When the Spinach is removed, the Cauliflowers are permitted to have all the space; consequently the ground is gone over, hoed, and allowed to rest for a few days, when some soil is drawn to the Cauliflower plants. The latest spring sowings of Spinach are made on a damp cool piece of ground, provided such can be obtained, as, thus circumstanced, better leaves are produced in hot weather than on dry and warm soils. In July, if the weather is moist, a sowing of the round-leaved variety is usually made on a spare piece of ground, for autumn use. The first autumn sowing is, however, generally delayed till August, early in which month a large sowing of the Prickly-seeded or Flanders is made broadcast on fields or in rows about 8 inches apart. Mr. Myatt prefers the Flanders, and, indeed, most growers also do so, on account of its large fleshy leaves and hardy constitution, and it sells more readily than the prickly sort. By sowing on the 12th and 25th of August and the 14th of September, Mr. Myatt keeps up a succession of Spinach from October till May. Although during winter but few leaves are produced, the earliest sowings yield freely before then, and the two latter abundantly in spring. Coleworts are frequently planted in a field of late Spinach, at 3 or 4 feet apart. In damp winters a large proportion of the roots may die, but in ordinary winters they retain their vitality, and produce abundance of large fleshy leaves in spring. No care is taken with this crop from the time of sowing till gathering, beyond hoeing and thinning once or twice. Spinach for market is packed firmly in round baskets, and also in hampers of any size convenient for handling. W.

SINGULAR INSTANCE OF GROWTH-FORCE.

HAVING observed that Beans, Squashes, and other seeds, would exert a great lifting force as they pushed their way out of the ground, President Clark undertook, last summer, to see what a soft vegetable growth could do. Though he had noticed bricks and stones upon sidewalks pushed away from their places by the roots of trees, and had read the story of an 80 lb. flagstone raised by three large Mushrooms, he had no conception of what a soft vegetable could lift till he experimented upon a Squash of the *Cucurbita maxima*, or Mammoth, variety. French Pumpkin is another name for it. The texture of this Squash is soft and watery, and it is of rapid growth and great size; in one instance in England it is said to have reached 246 lb.

To give the Squash a fair chance, Mr. Clark prepared beforehand. He built in a glass-house a box 4 feet wide by 50 long, and filled in rich earth 6 inches deep, and planted the seed July 27. It came up in due time, and grew apace. In watching the roots of this plant, it was found that it sent down a primary root 4 inches deep, and then lateral rootlets that travelled through the soil, when the aggregate of all their ramifications and their sub-divisions were counted, at the rate of 2,000 feet per day. The whole of the roots, counting those which were sent down from the nodules and appeared first as tendrils, reached the enormous length of 80,000 feet, equal to 15 miles if placed in one straight line. It threw out several branches from the main stem, and sent up flower-stems, every fifth one of which was a pistillate flower. One of these pistillate flowers was fertilised, a Squash grew, and, at about one month from the time of planting the seed, it was thought to be large enough to break to harness for pushing. That it should not yield from below, a hollow bed fitting the form of the Squash was placed under it and firmly supported. A harness was made of three strong flat iron bands, bent to the shape of the fruit and fastened together. Above these bands, and resting upon their middle and most elevated part, was raised and fastened a long sharp edge of steel for a pivot to balance a lever on. One end of a strong iron lever was made fast a foot from the pivot, and the other end reached several feet the other side. Weights were hung on the long end of the lever, and left for the growing Squash to hoist. The iron lever soon failed to hold it down, and bent and broke. This was replaced by a larger bar of steel. When this failed, a strong chestnut lever was substituted, and broke. Then a tough oak lever, and, finally, a chestnut fence-post, 9 feet long, and 5 by 6 inches where it rested on the pivot. But lo! this strong timber, loaded on the long end with six anvils and seven pairs of chains, cracked under the tremendous pressure exerted by the growth of the soft Squash. The weight it was lifting at this time, 24th of October, which had been gradually increasing from 22nd of August, was 4,120 lb. On the 31st of October the lever failed and was strengthened with a piece of an old tire of an ox-cart wheel. The Squash continued to grow, but the harness-irons bent so as to break the shell at the corners, and the weights were therefore removed on the 7th of November, 1874. Mr. Clark thinks there can be no doubt that the expansive force of the Squash was equal to lifting the 5,000 lb. if it could have been properly distributed over the surface. After being freed from its labours the distinguished Pepo was honoured with a presentation to the State Board of Agriculture of Massachusetts. The weight, if rightly remembered, was 64 lb. It was cut open in presence of the audience, and the usual cavity found crowded full, or nearly full, of fibre. There was cavity only large enough to hold about one quart of water, the outer surface was indented with the enormous pressure; the iron bands of the harness which rested on it being only about 1 inch wide. Could a larger part of its surface have been safely covered from the light it would, it is thought, have accomplished even more. However, it was agreed that it has given an instructive lesson of the enormous vital power in the soft cells of a pulpy vegetable, seven-eighths of whose substance is water.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Large Mushrooms.—Four Mushrooms, which I cut from our house here on the 12th inst., weighed together exactly 1 pound, and the largest of them measured 6 inches in diameter. Is not this rather an unusual size?—JOHN R. STIRLING, *Park Wern, Swansea.*

A Large Head of Cabbage.—The weight of the fine heads of field Cabbage exhibited at the Royal Dublin Society's show last week, by Mr. Bird, gardener to Lord James Butler, averaged each about 3 stones; each, too, was as solid as a block.—*Irish Farmers' Gazette.*

White or Silver Beet.—When this can be got true, it forms an excellent winter vegetable before Christmas, taking the place of Seakale; and among vegetables on the exhibition table in the autumn months, nothing—not even Celery—looks so well as this Silver Beet. Associated with Tomatoes, Carrots, and similar produce, its effect is excellent.—STAMFORDIAN.

Growing Potatoes for Exhibition.—I shall feel greatly obliged by vegetable exhibitors and Potato growers giving me the benefit of their experience on this subject. The cleanest and best-shaped Potatoes I have ever seen were grown by Mr. Frisby, at Blankney. Let us, therefore, hope that he will favour us with some account of his mode of growing them.—IGNORAMUS.

Prices of Potatoes.—I am anxious to learn the prices which Potatoes are fetching in different parts of the country, and it might be useful if, at the same time, it were mentioned whether or not disease had been prevalent. About Stamford Potatoes have gone bad after having been lifted for storing, especially where they had not been taken up as soon as they were ripe.—ENQUIRER.

Celery Fungus.—I send you some leaves of Celery suffering from a disease of some kind, which made its appearance about the end of September in different parts of the rows, in the form of small brown spots. It increased very fast, spreading all over the leaf and from plant to plant, turning them yellow; it then creeps down the plant, stopping growth, and then it begins to rot. I have taken up as many as a dozen in succession all diseased and rotten. If taken up just as they begin to look yellow, they can be used.—J. C. T. W. [Your Celery is infested with a Fungus called *Puccinia apii*.]

THE LIBRARY.

THE CULTIVATION OF ROSES IN POTS.*

ANY work throwing light upon, or likely to give a stimulus to, the cultivation of so beautiful and so useful a flower as the Rose is sure to be looked upon graciously by all lovers of garden flowers. The little book before us, although it disavows any intention of instructing professional growers, and is intended merely to furnish a guide to amateurs, is compiled with so much care by its author, and embodies the result of so much practical experience, that it cannot fail to be useful to all. That it has now reached its fourth edition is a proof that its merits have, ere this, been recognised; and its enlarged form and the conversion of what originally were brief notes into more solid matter must increase its value, and, we hope, extend its circulation. The volume is divided into two parts; the first treats of the cultivation of Roses in pots; the second is the autobiography of a pot Rose, an amusing section, from which we borrow the annexed wood-cut. The following useful remarks upon pruning we have extracted from the first portion of the work:

Pruning.

About the middle of November pruning may be performed, in order to effect an early bloom. The plants having been thinned out previously, all that is now required is the shortening-in of the remaining shoots. It is a difficult matter to lay down any precise rules with regard to pruning, upon the judicious adaptation of which depends not only the well-forming of the plant, but, in a great measure, the perfection of flowers also. In order to prune Roses with certainty of success, we ought to know the character of each plant we are about to operate on; for Roses of the same group oftentimes require very different pruning. The best criterion we can offer is, perhaps, the habit of growth. Among the Hybrid Chinese, the two favourite old Roses, Charles Lawson and Chéné-dolé, both vigorous growers, frequently occasion great disappointment by not blooming. The failure will probably be found to arise, in most cases, from the method of pruning. These Roses, and others of like habit, should be well thinned out, and the shoots that are left for flowering shortened but little. Others of the same group (Hybrid Chinese), that are weak or moderate growers, may be shortened in close; such as Comtesse Lacépède, a beautiful and well-known Rose. Then there are varieties of intermediate growth, which may be pruned in proportion. The groups Provence and Moss may be pruned closer than the Hybrid Chinese. The Autumnal Roses there is little fear of pruning out of bloom; early or late, they are sure to flower. The Chinese and Tea-scented, when grown on their own roots, should be cut close, to induce them to throw up shoots from beneath the ground, as these will grow much stronger than shoots formed above ground, and flower beautifully through the summer and autumn. One point, too, should be borne in mind, that Roses, when grown in pots, may be pruned closer than when grown in the open garden. One season I shortened back the shoots of the newly-potted Autumnals, Moss, and

Provence, from two to four eyes; and, what with thinning and shortening, the plants looked very naked, and, at first sight, appeared to many to have been cut too much. But considering that each of the remaining shoots would produce two, three, or four new shoots, and that the plants were not in the open ground, but in pots, it was evident such was not the case; and this their after-growth and flowering fully confirmed. When dealing with the most vigorous kinds of Hybrid Chinese and Hybrid Perpetual, I left no more than six eyes on a shoot; and though the plants were young, and, consequently small, their blooming, both as regards the size and the abundance of flowers, was all that could be wished.

FLORISTS' FLOWERS.

THE Wood Anemone is a pretty white flower, tinged with violet. This is the original of an Anemone which we shall find in

another part of the garden; there, its foliage forms a beautiful rich green turf, from which spring simple rose-shaped Anemones, red, scarlet, purple, blue, violet, white—or streaked with all these various colours. A bed of these is one of the richest and most magnificent sights imaginable. The Anemone is one of the plants called florists' flowers. There are people, sober in their pleasures, who concentrate their cares upon a single flower. There are amateurs of Tulips; for them there is no other flower in the world but Tulips—other flowers are weeds; and still further, among Tulips, there is only the Tulip with the white ground, and among Tulips with the white ground, there is only the Tulip with the rounded petals. The year begins for them on the 15th of May, and finishes on the 28th of the same month. There are amateurs of Roses, there are amateurs of Auriculas, there are amateurs of Pinks, there are amateurs of Dahlias, there are amateurs of Camellias, there are amateurs of Ranunculuses, there are amateurs of Anemones: these are the only flowers—others are called bouquets: and you should see with what a tone and manner they pronounce the word bouquet! So with sportsmen, there are some animals that are game, and others that are not. Of all this race, the amateurs of Tulips are the most ferocious; not that the others, however, are remarkably mild, or that I advise anyone to approach them without due precaution. It sometimes happens that the amateurs of Anemones cultivate Ranunculuses simultaneously, but they expose themselves to be treated as dabbles



A well-grown pot Rose.

by severe amateurs. I knew a Tulip fancier, who, at the season for planting his Tulips, made every year two composts—one of maiden earth, sand, and leaf mould; the other of clay, pigeons' dung, and animal mould. In the first, which is favourable to Tulips, he planted his own roots; in the other, which combined all the contrary conditions, he placed such as he had received as presents, or in exchange. If he thinks his cares insufficient, he waters them with soap-suds. Then, at the period of their blooming, after having made you admire his own plants, he leads you to the others, and tells you, in a delightfully self-sufficient tone—"These are plants which distinguished amateurs have been kind enough to offer me in exchange for mine!" To return to Anemones. They were brought into France from the East Indies, more than two centuries ago, by a Monsieur Bachelier, who was ten years before he would give a single one to anybody. A magistrate went to see him in his robes, and purposely making their folds drag over the Anemones in seed, contrived to carry away a few of them, which adhered to the wool of his robe

* "Observations on the Cultivation of Roses in Pots; including the Autobiography of a Pot Rose." By William Paul, F.R.H.S., Author of "The Rose Garden," &c. Fourth edition. Kent & Co., 23, Paternoster Row.

Never speak to an amateur of Anemones, of anything else but his Anemones; if you say to him, "I have a beautiful Pink," he will ask you what sort of an Anemone that is. But do not imagine that the amateurs of flowers love flowers better than the learned do: the learned do not acknowledge the cultivated Anemone, they say that it is a monster, or they dry it, paste it on paper, and write barbarous words under it. Amateurs content themselves with requiring difficult conditions of Anemones; thus there is a sort of green calyx, which ought to be placed just at one-third from the flower, and two-thirds from the earth, and without this the Anemone may display the richest colours in vain—it will be dismissed from the bed, and declared nothing but bouquet! I spare you a dozen more or less singular conditions which are required of these poor flowers. Here is a Peony, a sort of gigantic Rose, of the most beautiful red. There are no amateurs of Peonies, unless it be the tree Peony, because that is perhaps less beautiful, more difficult to cultivate, but more scarce. The ordinary Peony, red, rose-coloured, or white, is held in no esteem. But it is so common! Thanks, O Lord, for all that thou has created common! thanks for the blue heavens, the sun, the stars, murmuring waters, and the shade of embowering Oaks—thanks for the Corn-flowers of the fields and the Gilly-flowers of the walls—thanks for the songs of the linnet and the hymns of the nightingale—thanks for the perfumes of the air and the sighing of the winds among the trees—thanks for the magnificent clouds gilded by the sun at its setting and rising—thanks for love, the most common sentiment of all—thanks for all the beautiful things thy stupendous bounty has made common! The Peony was formerly, however, much celebrated: it drove away tempests, broke enchantments, defeated witchcraft, and now and then cured epilepsy. Its name, *Paeonia*, came from Paeon, a celebrated physician, who employed it to cure Pluto, when wounded by Hercules. The root of the Peony, therefore, was not taken lightly; it was at a certain hour of the night, and during a certain phase of the moon; and still further, it was necessary to take care not to be observed by the woodpecker, whilst digging it; whoever was observed by the woodpecker became blind. The Peony is no longer anything but a beautiful and splendid flower, despised by amateurs, and seldom seen but in poor gardens.

ALPHONSE KARR.

FOREIGN FRUITS IN COVENT GARDEN.

The importation of foreign fruits to this country is destined at no distant date to influence to a considerable extent the market value of home-grown produce. Indeed, such imports as now find their way to Covent Garden alone, form no inconsiderable proportion of the gross supply of the market. The fact is, we are not a fruit-growing people, and on that account the demand for that kind of produce is greater than the home-grown supply; hence, recourse to foreign sources has been had as the only means of enabling dealers to satisfy the demands made upon them; and the plan, adopted in the beginning to meet an emergency in one or two special cases (early Strawberries, for example), has now become universal, and is productive of excellent results. Whatever tends to cheapen fruit and to bring it within the reach of the masses, is deserving of support, and this the foreign trade has already done. Grapes, Melons, Pines, and other fruits of warmer latitudes than our own have been brought within the reach of every artisan who cares to eat them, and the probability is that ere long imported fruit will be still cheaper. It is scarcely likely that the health of the public will be worse in consequence of this, for physiologists tell us that good fruit is the best food that can be eaten at any season, and one cannot but believe that a cluster of luscious Grapes or a good Pear is at least as likely to quench thirst, under a broiling sun, as the questionable beverages usually consumed on a summer's day with that intention. Although we are a nation of beef-eaters by birth yet a taste for fruit is rapidly extending amongst all classes, and the proof of this is that our home-grown supplies are insufficient to meet our demands. Just at the present time Oranges are coming in very largely and are selling at remarkably low rates. These are imported from St. Michael, Lisbon, Valencia, Messina, and Palermo. Lemons are also very plentiful, and come principally from Malaga, Messina, Palermo, and Alexandria, packed in long flat or round-topped cases of lath or thin boards, the packing material consisting of Indian corn or Maize husks. The first importations generally arrive about September or October, and are characterised by their acidity, pale colour

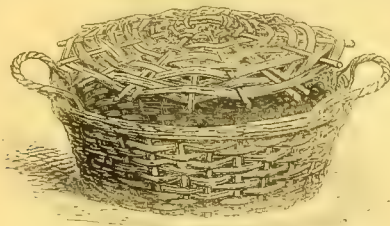
and small size. Later on in the season finer and better ripened fruit makes its appearance; but, notwithstanding the present expedition in transport, we seldom obtain fruit with that luscious and agreeably perfumed flavour that distinguishes Lemons when plucked ripe and eaten off the tree. Like all other cultivated fruits the Orange (*Citrus Aurantium*) sports into numerous varieties; indeed, this must have occurred to all who buy the fruit in this country. The differences chiefly consist in size, colour of rind or flesh, thickness of the skin or rind, sweetness, and time of ripening. Among the excellencies of the Orange, as an imported fruit, are its keeping qualities; indeed, it is a fruit nearly always cheap, and readily obtainable almost all the year round. Apart from those eaten as imported, many thousands of cases are annually manufactured into marmalade and also into wine. The best marmalade is that prepared from rind of the Bitter or Seville Orange; but fruits of all sorts are used for the commoner and cheaper preparations of this agreeable conserve. Among the many distinct varieties brought to Covent Garden are the following:—The Blood Orange; this, in external appearance, resembles the common St. Michael's; but the pulp is of a deep crimson tint, and not yellow as in ordinary kinds. The little Tangerine is deservedly popular, its flavour being most delicious. It is readily known by its small size, and flattened or oblate form, while its skin or rind is very brittle and delicately perfumed. Citrons are oblong or rounded, with a remarkably rough skin; indeed, in general appearance, they most resemble gigantic Lemons. The Shaddock (Forbidden Fruit) and Pomeloes are large, and highly ornamental, forms of Citron, and of little use except for conserves or marmalade. Among the rarer forms of the Citrus family we may mention the pretty little egg-shaped Chinese Orange (*Citrus japonica*), home-grown fruit of which makes its appearance at rare intervals. This variety is characterised by its



Pine as imported from St. Michael.

bitter pulp and sweet lightly-perfumed rind, the latter being of extraordinary thickness as compared with the size of the fruit. Under the name of "Kumquats" or "Coumquats," this fruit is now commonly imported in a preserved state, and large jars of it may be purchased at about six or seven shillings each, or at about a shilling per pound retail. The Orange is, perhaps, the oldest of our imported fruits, and imports of it of late years have increased with great rapidity. Pines are now largely imported from St. Michael and the West Indian Islands, the varieties being the same as those grown by us at home, and the fruit equally fine, both in appearance and flavour. Their introduction in large quantities, and consequent cheapness, will do much towards checking Pine culture in this country, especially as it is generally a very costly undertaking. The St. Michael's Pines are great favourites with the dealers, on account of their being invariably sound at the core or heart; and, in this respect, they are more to be relied on than fruit grown at home. The plan of culture adopted at St. Michael is pretty much the same as that at home, only that the sun takes the place of our costly heating apparatus, and the expense of fuel is also got rid of at the same time. The mode of packing the fruit is peculiar and deserving of notice, and our illustration shows how this is effected at a glance. A round, square, semi-circular, polygonal, or triangular case is made by tacking laths on to the variously-formed ends, as here shown. A piece of board, the same shape as the end, forms a rest for the base of the fruit, and the stem protrudes below, where it rests in a common flower-pot filled with moist Moss or bark. The crown above is securely held in its place by two pieces of board, which fit round it at the base, just above the fruit, and are secured by tacks driven through the upright laths all round the circumference. These cases, each holding a separate fruit, are then packed in large crates; and, by these simple contrivances, ample ventilation is secured, and each fruit sets firmly in its place, so that all danger of bruising, by contact with each

other or any foreign substance, is avoided. This plan is worth the attention of growers at home who have to send fruit to a distance. Amongst the most important of all the recently imported fruits, however, are Grapes, a fruit long restricted to the tables of the wealthier classes; but excellent Grapes may now be purchased in Covent Garden, from August to January or February, at prices varying from sixpence to one shilling per pound. Grapes are imported from Holland, Spain, Portugal, Germany, France, and the Channel Islands. The best kinds are the Dutch and German or Hamburgh Grapes, which arrive about October in considerable abundance. These are equal to home-grown fruit in appearance, and are much lower in price—the average prices ranging from ninepence to one shilling per pound. The flavour is not so good as that of home-grown fruit, but by some they are liked even better, on account of their pleasant acidity. These Grapes come packed in round baskets or hampers (as shown in our illustration), each containing from 10 to 15 lbs., and in a plentiful season these baskets may be bought from seven to ten shillings each. The most noticeable feature in connection with these is the system of packing adopted by the growers. No packing material of any kind is used, the fruit being carefully gathered during dry sunny weather, and placed at once in these baskets, which are gently shaken and filled, so that the cover, when fastened down securely, presses firmly on the fruit. We have seen fruit packed in this manner turned out as fresh here in the London markets as if just gathered; and the hint is well worth general application by gardeners when packing fruit of home growth, for it is a noticeable fact that much of the fruit sent to Covent Garden by Grape growers in England is completely spoiled



Basket in which Grapes are imported.

in appearance through being swaddled in cotton-wool or paper, whereas, if pressed firmly in baskets or cases, but little of the bloom is lost. The delicious little amber-berried Chasselas de Fontainebleau (Royal Muscadine), so common in the fruit markets of Paris, is, unfortunately, but rarely seen in Covent Garden. These are packed tightly in small oblong boxes, and bear carriage well, but the retail dealers do not care for them, because they do not keep well, and must, consequently, be sold on arrival for just whatever they will fetch. These Grapes are sold from sevenpence to tenpence per kilo (about 2 lbs. English) in the French markets, or even cheaper by the box of eight or ten pounds. Within the last few years a kind of Muscadine, very similar to the Royal Muscadine in appearance, has been imported from Lisbon and other parts of both Portugal and Spain. These are very sweet and juicy, and keep for several weeks without injury. They are imported in boxes, and sell at prices varying from fourpence to one shilling per pound retail, and much cheaper by the box or at auction sales. In size and flavour these are fully equal, and in many cases superior, to Muscadines of home growth. These come in before the Hamburgs, or "Grocers' Grapes," as they are called by the trade, and last until the Almerian fruit arrives in November. A large red or purple-skinned Grape is imported in limited quantities from Lisbon, and is of excellent quality, the flesh being firm and juicy. It keeps well, but the berries fall from the stalks, which are very brittle as with "Aramon," a French wine Grape which it in some respects resembles. The White Almerian Grape carries on the supply from November until March or even later, but it is a thick-skinned and insipid-flavoured variety, with nothing but its long-keeping qualification to recommend it. This Grape is known in some English collections as "Bowker," but is not worth room in a house, being of a coarse habit in every respect. It is, however, worth a trial as a stock for the late-keeping kinds, as White Lady

Downes, Mrs. Pince, Black Muscat, and others. Foreign Peaches are rather limited in supply, but during the last year or two a few excellent samples have been sent by the Montreuil growers in very fine condition. The excellence of the French Peaches is well known, and, as well-packed cases may be despatched from Paris at 4 o'clock p.m. and arrive in London by 10 or 12 a.m. the following morning, there is no reason why this luscious fruit should not be largely sent to us by French growers. During the past year a few samples of yellow-fleshed Peaches have arrived from America, but these are of second-rate quality, and much cannot be expected of this most delicate of all fruits after a ten or twelve days' voyage, and the not over-careful handling to which it is subjected. We must look to France and the Channel Islands for any additional supply of Peaches, as the climate and transport arrangements are well nigh perfect for all the purposes of culture and importation. A few Nectarines also come from France, generally packed in small deal boxes, and these sell at from 2s. to 3s. the box. Green or fresh Figs are more plentiful than formerly, the principal source of supply being the celebrated old Fig orchards at Worthing (Sussex), and considerable quantities also come from Guernsey, and a few from Jersey. The supply of these is also supplemented by a few choice samples grown in our hot-houses at home, these, as a rule, being the best-flavoured fruit. Melons come from Lisbon, Cadiz, and from many of the ports of the Mediterranean—the Cadiz or greenflesh Melon being often of very excellent quality, notwithstanding that the fruit must necessarily be gathered and packed before it attains that precise period of luscious ripeness which renders it so acceptable in most tropical and sub-tropical climates. The true Water Melon is rarely seen in our markets, although it is common enough in the ports of the Mediterranean, and bears carriage well. This is larger than the Cadiz Melon, and of a fresher green colour outside, while the crystalline, melting flesh is of a delicate rose or salmon colour, and in this the jet-black seeds are firmly imbedded. In hot weather this is a delicious fruit, and we should like to see it imported more largely than is now the case. The small brown densely netted Musk Melon occasionally makes its appearance, but the main demand is still supplied by Portuguese and home-grown fruit. Apples are now largely imported from America, the Newtown Pippin being an especial favourite here. These are packed in barrels, each holding from two to three bushels. No packing materials are used, but the lid is pressed down tightly, and this securely protects the fruit from friction. Pears come principally from France, the Channel Islands, and from Germany and Holland; the favourite varieties are Jargonelle, William's Bon Chrétien, Marie Louise, Duchesse d'Angoulême, Beurré Clairgeau, Louise Bonne of Jersey, and two or three other well-known standard varieties. These come packed securely in wooden cases, and suffer very little in transit. The enormous specimens of Beurré Clairgeau and Belle Angevine (Uvedale's St. Germain's), so often seen exhibited at fancy prices in our fruiterers' windows, come from Jersey and Guernsey, and, apart from their monstrous size and high colour, have little to recommend them. Among the rarer fruits which are from time to time imported to Covent Garden, we may instance Prickly Pears, the fruit of a Cactus (*Opuntia vulgaris* and other species); Pomegranates, the pulp of which is delicious eaten with port wine and sugar; West Indian Custard Apples, the fruit of *Anona squamosa* and *A. reticulata*. Bananas are largely introduced from the West Indian Islands, some of the clusters weighing seventy and eighty pounds each. When thoroughly ripe, the flavour of the best kinds of Bananas is simply delicious, but this is before it is ripe. The fruit is produced by *Musa Cavendishii* deteriorated in imported fruit, as it has to be cut from the plant and *M. sapientum*, both of which are largely cultivated in most tropical countries and used as common articles of food by the natives. Litchis are now brought from China, and are sold here at from three to four shillings per pound. These are the fruit of *Nephelium Litchi*, one of the most popular of all imported fruits, not even excepting the Apricot. The round variety is most common, and has a thin shell of a reddish-brown colour, covered with rough warts. The pulp, when fresh, is sweet and jelly-like; but, as imported in a dried state, it may be likened to that of French dried Plums or Prunes;

one of the most peculiar characteristics of this fruit is its extreme lightness. The Loquat, or Japanese Medlar, another Chinese and Japanese fruit, is sometimes imported. This fruit is produced by *Eriobotrya japonica*, a small evergreen tree, sometimes grown as a foliage shrub in this country. The fruit is borne in clusters, each being about the size of a pigeon's egg, and of a delicate yellow colour, suffused with rose when fully ripe, and possessing a delicate and agreeable sub-acid flavour. American Peanuts, as the

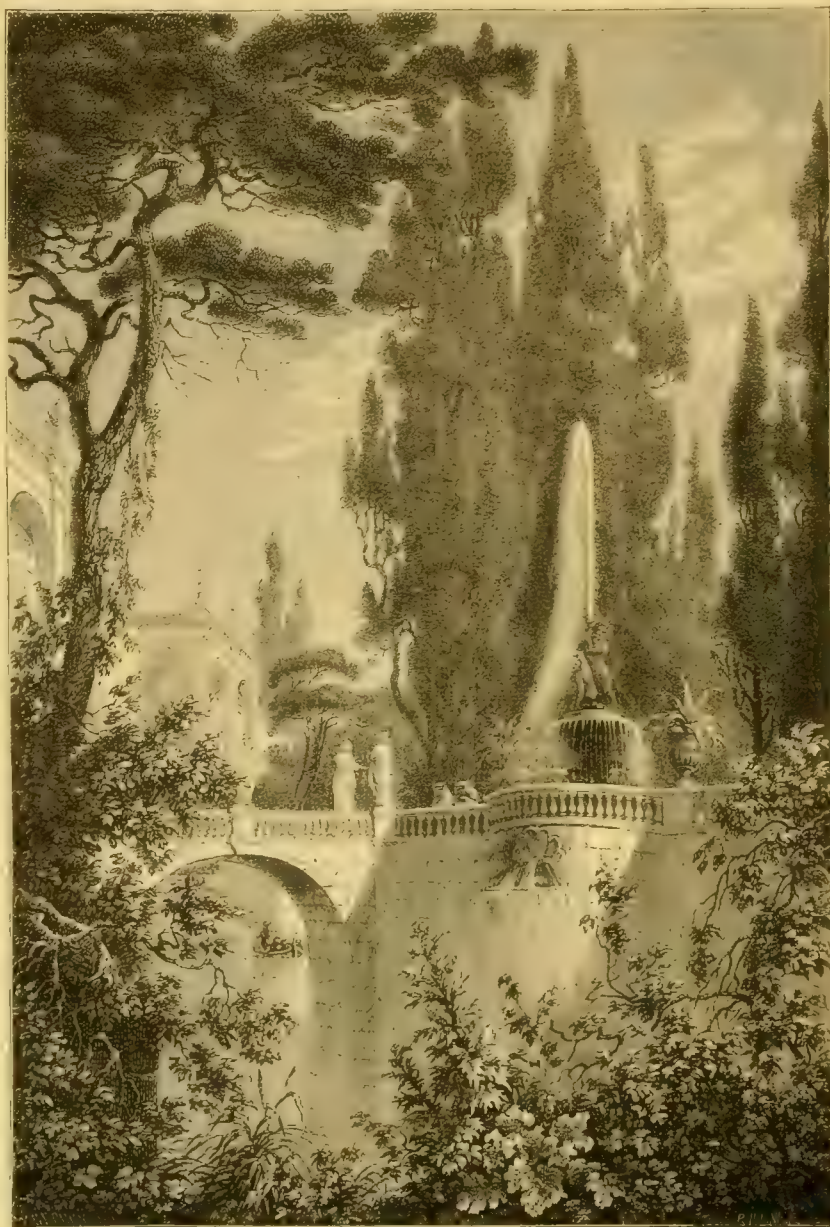
fruit-pods of *Arachis hypogynæ* are called, are far from uncommon, and are easily known by the two seeded pods being beautifully netted, so that they resemble little wicker baskets. This plant is a native of the Cape, but is now widely distributed in most tropical and inter-tropical countries. A striking peculiarity possessed by this plant is, that after flowering, the peduncles bend down and thrust the young fruit into the soil to ripen—hence one of the essential conditions necessary to its growth is a light open soil. These nuts, slightly roasted, are sold in American theatres as extensively as Oranges are in London. A valuable oil is also extracted from them in considerable quantities. Brazil Nuts and Sapuacia Nuts are both produced by species of *Lecythis*, natives of the forests of Guiana and Brazil. The last named are by far the best in quality and are principally imported from Para. The so-called nuts, when growing, are enclosed in urn-shaped receptacles, popularly known as "monkey pots," these are, however, seldom imported, the nuts being

taken out and packed in bags and boxes for shipment. Cocoa Nuts come in considerable quantities from the West Indian Islands and other parts of the tropics, throughout which the Cocoa Nut Palm (*Cocos nucifera*) is grown as one of the most valuable of all vegetable products. In their original state the nuts are covered with a thick triangular covering of fibrous and cellular matter, that bears some analogy to the husk of a Walnut, but this is stripped off to lessen their bulk previous to their being packed for shipment. F. W. B.

TREES AND ARCHITECTURE.

THE interesting paper read before the Architectural Association, and published in *THE GARDEN* (see p. 548), is well worthy the careful study of horticulturists. In that paper will be found many interesting passages from the works of both architects and landscape gardeners; but the deductions sometimes arrived at from the discussion of the merits of such passages too often tend to show that an architect cannot possibly be competent to settle matters which belong exclu-

sively to a profession requiring fully as much training as his own, and of a very distinctive kind. It is well put by the author, that a distinguished philosopher, when pretending to settle points of an artistic character in regard to architecture and landscape, is certain to fall into errors, which one practically and suitably trained could not possibly commit. Mr. Herbert Spencer is the philosopher alluded to, who says "that regular architecture cannot, by any possibility, be suited to an irregular site," and that "any picture representing such a combination must be essentially unpicturesque." Both experience and theory have, however, long ago proved that the placing of a regular building in the midst of a rugged and irregular scene imparts additional value to the building. The accomplished Cockerell tells us in his picturesque way, that, in the case of temples so situated, the rugged scenery formed "a powerful contrast with the highly-finished object towards which the steps of the devotee were directed;" and it may be asserted, with equal force, that Gothic



Pointed Trees and Horizontal Architecture.

architecture is fully as effective as Greek in such a situation; as is evidenced in the picturesque pile of Mont St. Michael, and on a smaller scale in St. Michael's Mount, Cornwall, both examples tending to illustrate the evident fact that either rocks or trees, by their irregularity of their forms, heighten the effect of buildings. Much that is vague and contradictory occurs in the well-arranged and well-written paper alluded to, both in the original matter and in the interesting and eloquent, though often misleading, quotations from authors who have

written on the subject; but, instead of a captious analysis of passages, which are useless from their vagueness and want of definition, or from erroneous views concerning the use of trees according to their forms, it will be better to put forward a few remarks from the horticulturist's, rather than the architect's, point of view, in regard to the production of beautiful sites for buildings, or the improvement of naturally fine situations by judicious planting. Repton, seeking some kind of fixed principle by means of which he could readily adopt

the character of his plantations to the buildings for which they were destined to form the surrounding scenery, arrived at the conclusion—very sound in the main—that trees, which rise, steeple-like, to a point, like the Cypress, the Poplar, and many others that might be named, are well suited to associate strikingly and pleasingly with architecture in which horizontal lines chiefly prevail, such as those presented by Greek temples, or, what is more to the purpose in the modern practice of landscape gardening, the Palladian manner, as exhibited by many of the palaces and villas of Italy. As a general principle, Repton's view is, doubtless, a sound one; but then he wrote at a time when more than half the noble kinds of trees, now available for the purposes of the landscape gardener, had not been introduced, and, had he lived in the present day he might, doubtless, have modified the arbitrary and sweeping character of the hard and fast lines to which he then adhered. Our illustrations, entitled, respectively, "Pointed trees and horizontal architecture," and "Round-headed trees and horizontal architecture," will serve to exemplify how far the Repton principle was correct in the main, and how far it was insufficient, and ought not to be arbitrarily considered an invariable rule. In the first example the prevailing horizontal lines of the balustraded terrace wall of an Italian villa, which are only slightly broken up by statuary and vases, have certainly, at a glance, a very agreeable aspect, backed as they are by the dark vertical forms of the aspiring Cypresses. The square-topped wings of the villa,

with its arcades, rising above the arch of the bridge, also afford a charming contrast to the strong vertical line furnished by the trunk of the Stone Pine, and the irregular character of the ramifications, which form its crown, greatly assist the effect. In the case of the Pine trunk, it is, however, almost as much the irregularity of the line as its direction, that renders the effect so pleasing; and, while speaking of the vertical character of the Cypresses in contrast with the terrace wall, we have not sufficiently con-

sidered that it is the perpendicular character of the fountain, above and below the balustrading, that forms the true opposition of lines in that part of the composition; so much so, that the combinations would be absolutely improved were the high jet of the fountain backed by round-topped, instead of pointed trees. It will also be seen that the irregularities of the foliage in the foreground, passing boldly athwart the irregular lines and finished details of the architect's work, greatly aid the pleasing character of the general composition. Our second illustration serves to prove that a striking opposition of lines is by no means absolutely necessary in order to form an agreeable composition of architecture and foliage. The chief feature of the second picture, consists of a structure, in the manner of the French "revival," which serves as the frame-work of a fountain; and its main lines, as in the style of the Italian revival, led by Palladio, are horizontal. Therefore, upon the crude theory that no foliage, but such as exhibits a vertical character of growth, would group with it pictorially, it



Round-headed Trees and Horizontal Architecture.

would require to be surrounded with Poplars and Cypresses, as a matter of course. Yet, it is conclusively shown in our illustration, that the round-topped tree in the foreground—a Horse Chestnut, with spreading branches—groups admirably well with the horizontal lines of the architecture; while an Acacia, beyond, although its general form is composed of somewhat horizontal stages of foliage one above another, groups equally well with the architectural features of the composition. In fact, with taste, judgment, and, above all, a

thorough knowledge of the vastly extended arboretum which we have now the privilege of making use of, trees and architecture may be combined in an endless variety of ways, all equally beautiful.

H. N. H.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

WHERE it is the intention to plant or remove Gooseberries and Currants, the sooner such work is done now the better, if the weather be mild; but do not plant anything when the ground is crusted with frost, as in the operation the frozen soil gets in contact with the roots, which is by no means calculated to benefit them; the ground should be well dug before it is planted, even if it has been under vegetable crops before. These fruits (except Black Currants, which like shade) are best grown on good open ground; they will, however, succeed betwixt Apple and Pear trees, if the latter are not planted too closely. In such situations they frequently bear well when the crop in more open places gets cut off by spring frosts; the ground round these, and any trees that are newly planted, should be mulched as far as their roots extend with half-rotten manure. Raspberries should also be planted; for this fruit the ground should be well enriched by digging into it a good dressing of manure previous to planting; existing plantations of this fruit should be pruned and tied, and, where stakes are used, renewing such as are decayed; few crops require, or will better pay for, a liberal use of manure than Raspberries. Even old plantations of them that have become weak, can frequently be brought round by enriching the ground, and otherwise bestowing on them judicious cultivation. One of the principal things to be observed in the case of the Raspberry, is never to use a spade amongst them; the greater portion of the roots lie near the surface, and if the spade is employed in digging, quantities of them necessarily get injured; even fork-culture should not be too deep. Strawberries should now be cleared of runners and the ground should be slightly forked over; these, like Raspberries, are surface-rooters, and should never have the spade used among them. If the beds are getting old, and the ground poor, a dressing of manure may be forked in.

Pruning Gooseberries and Currants.—Remove each year a portion of the old wood, and leave in its place new shoots. Young or small bushes, which it is desirable should grow larger, should merely have surplus wood removed, and the points shortened of such as is to remain. The buds of this fruit are liable to be attacked by birds after the commencement of the new year; they should, therefore, be protected, either by rendering them unpalatable, or by scaring away the marauders. This latter is more effective, as regards sparrows, than in the case of bullfinches or tontits. As a deterrent, there is nothing so effectual as threading the trees over, after they have been pruned, with white cotton. This should not be too thin, or it is not sufficiently visible to effect what is required, especially when it has become a little discoloured by exposure to the weather; the best material is that which is spun for common dip candle-wicks, unravelled, using a single strand, and threading it not too tightly, but leaving it so that it will move a little with the wind; thread it a dozen times across each tree; and, so far as sparrows are concerned, I never knew it to fail. To render the buds unpalatable, take some unslaked lime, and boil it as you would for making lime-wash; then add as much water as will make it thin enough to be applied to the trees with a syringe, using a coarse rose. In mixing it, as much soot should be added as will make the dressing a dark brown colour; choose a day that is likely to be such as will ensure the dressing getting quite dry, for if much rain falls before it gets dry, it will, in a great measure, be washed off. In pruning Red and White Currants, if the trees are as large as required, all the current season's growth may be cut away, except any strong shoots that spring from the base of the plants, which it may be desirable to retain in place of some of the old wood; these, after pruning, should either receive a dressing with the lime and soot mixture, or have the thread wound over them; neither must this operation be delayed, for, if once these feathered delinquents commence their attacks, in a very few days they will not only spoil the coming season's crop, but also destroy the bloom spurs that should last for years. Black Currants are not subject to such attacks, neither do they require so much use of the knife, except for keeping the bushes sufficiently open. After the pruning is completed, gather up all the strongest shoots of Apples, Pears, and Currants, and tie them in small bundles; they will be found useful for supporting flower-stems of such things as Pinks, and other small-growing plants. When all the ground amongst the bush fruits is cleared of the prunings, put on such manure as may be required, and fork it in without injuring the roots. The greatest enemy to the Gooseberry

is the caterpillar, which each season makes its appearance more or less where it has been in quantity the previous summer; unless completely destroyed, it is almost certain to appear again the succeeding season, for, if the caterpillars have been allowed to remain unmolested after having run their course upon the trees, they will, in the autumn, assume the cocoon state, and bury themselves in the soil near the stems of the bushes, remaining there until the sun's warmth completes the development of the perfect-winged insect, which will afterwards deposit its eggs on the leaves, where they quickly come to life, repeating the work of destruction entered on by the generations which preceded them. The most effectual method of dealing with these pests, and also that which entails the least trouble, is to destroy them when in the ground in the dormant state. This can be done by spreading about half a spadeful of dry lime over the soil, so as to let it extend 8 or 10 inches from the collar of the tree in each direction. This should be put on after the ground has been dug, and allowed to remain through the winter, when its caustic properties will destroy the embryo. Seasonable attention in this matter will save a good deal of after trouble, and the lime will benefit most soils. As to varieties of bush fruit, it is a mistake, for ordinary purposes, to grow too many. The following are useful kinds:—*Gooseberries (Red)*—Crown Bob, Red Warrington, and Keen's Seedling; (*Yellow*)—Yellow Warrington and Glory of Ratcliff; (*Green*)—Green Gascoigne and Heart of Oak; (*White*)—White Champagne and White-smith. These nine sorts will not disappoint anyone who may plant them. *Currants (Red)*—Cherry, Long-bunched Red, or Wilmots; (*Black*)—Black Naples and Lee's Prolific; these and the White Dutch are enough for general cultivation. *Raspberries (Red)*—Red Antwerp, Barnet, and Rivers' Large Monthly. (*Yellow*)—Yellow Antwerp. As to varieties of Strawberries it is difficult to advise, for the kinds that will succeed in one locality are useless in others. For an early crop there is nothing yet that has surpassed Keen's Seedling; it is not quite so early as Black Prince, but the fruit is much larger and is very fine in flavour. President, Sir C. Napier, and Sir Harry, are good free-bearing sorts that will succeed in most soils where Strawberries will do at all. There is yet nothing for excellence of flavour and beauty of fruit equal to British Queen, where it will succeed, but it requires a good strong soil, which all varieties of this fruit delight in; but which is more essential for the successful growth of this sort than of most others. In the kitchen garden, if there is an appearance of severe frost, provision should be made for the protection of such crops as are liable to be injured by it. The tender condition of most plants in the south of the kingdom is consequent upon the more than usually late growth of the present autumn, induced by copious rains after protracted drought; and the prolonged summer that we have experienced has left most things in a condition very liable to be injured.

Protecting Celery.—Care should be taken that Celery is not subjected to much frost, or it will not keep so long, however firm and solid the variety may be; for covering material, use Pea haulm, which, if put under cover when pulled up and kept dry until required, is very useful for such protecting purposes; if in a neighbourhood where it is plentiful, the common Brake is a good material, if not, stable litter may be used; but whatever is employed will be found much more effectual if not in absolute contact with the tops of the Celery. To prevent this, take some stout pieces of old Pea sticks and push them down in the rows betwixt the plants, then take some of the longest and straightest of the Pea sticks, or such as have been used for Runner Beans, and tie them lengthways to the upright sticks, a few inches above the tops of the Celery; on these place the litter or other material, letting it hang well over the sides like thatch; this will be the best way of protecting it from frost, and costs little more in additional labour than simply placing the material upon the tops of the Celery. Winter and spring Broccoli is frequently saved from being killed in severe frosts by the slight protection afforded by laying old Pea sticks down moderately close upon them, as these break the full force of the cutting frosty wind. During severe frosts, or when there is appearance of snow, cover Parsley with shutters or boards, if no frames are at hand, not allowing the covering material to absolutely touch it. Standard Roses, that have been several years planted without removal, if they throw up many suckers, should, if not done earlier in the season, be taken up, and have all their suckers well trimmed off, adding, if necessary, some new soil and manure. In an amateur's garden, where there happens to be not more than one glass-house, it frequently has to do duty for a number of things, comprising a variety of plants on the stages and shelves, with Vines overhead. Undoubtedly it is much better for the latter to have a house to themselves, for where both are grown together, it must necessarily entail a compromise of treatment; neither the plants or the Vines, get exactly what they require, yet, under such circumstances I would

by no means discourage the attempt in growing some Grapes over the plants (and I know amateurs who succeed very fairly with both), provided too much is not attempted with either, but not so as to shade the latter too much, which will be the case if the number of Vines are planted that is usual where the house is devoted to the cultivation of Grapes alone. Where a house is made to answer this double purpose, it should be span-roofed, as light as possible, and one or a couple of Vines should be planted at one end, and run lengthways under, or a little way from both sides of, the ridge; by this means they get a good deal of length for extension—one great essential in Grape culture—and they do not so seriously interfere with the plants grown underneath. The sorts should be such as are of easy culture, as Black Hamburgh, and if a white variety is required nothing will be more suitable than the White Muscadine.

GARDENING FOR THE WEEK.

Roses.

POT ROSES placed in the forcing house in the beginning of November will now be coming into bloom; in syringing, care should, therefore, be taken not to wet the blossoms, as that would cause the outside petals to damp off, and thereby impair the beauty of the Rose. On fine sunny days give plenty of air, which not only strengthens the wood but improves the flowers as regards substance of petal, a circumstance which enables the blooms to last longer when cut than they otherwise would do. Maintain a steady bottom-heat, which Roses enjoy more than most plants. Any check experienced in this respect is apt to be productive of small and deformed flowers. A little manure-water, now and then, may be given with advantage. Sheep droppings and soot—say half a bushel of soot and one bushel of sheep droppings, put in a tub of water, make a good manure for Roses; but it must not be used too strong. Put a little of it in each can of water when watering the plants. Standen's manure dusted over the surface of each pot, and watered in, will also be found useful. In no case, however, use manure-water until the Rose tree has fairly broken into leaf, for, if used when the plants are first placed under forcing conditions, the top buds will grow away strongly and rob the lower ones of support, in many cases spoiling the plant. Introduce plants to keep up a succession of bloom. If painted over with Gishurst, or a mixture of soft-soap and sulphur, mildew will not be troublesome.—H. G.

The Flower Garden and Pleasure Grounds.

A season of comparative inactivity may be said to have now intervened as regards these departments. The present month has been much colder than is usually the case, and the soil is generally either frost-bound or hidden by its winter mantle of snow, which not unfrequently adheres to the foliage and branches of evergreen trees and shrubs until its great weight proves seriously injurious to them, by splintering and breaking off boughs, &c. To prevent this, as far as possible, it is advisable, as soon as possible after a heavy fall of snow, to attend to belts and plantations of choice shrubs, Coniferous trees, &c., and, by gently shaking them, remove the bulk of this accumulation, carefully avoiding, at the same time, injury to the foliage or bark of the plants. After falls of snow a portion of the central parts of walks and drives should be swept to render the necessary traffic as agreeable as may be; and this should always be done as soon after the snow has fallen as possible, so that the position of the walk or drive may at once be indicated, and dwarf shrubs, herbaceous plants, and edgings of dwarf Box or Grass, thus saved from serious injury by being trampled on. Choice Carnations, Auriculas, and other Alpine plants, should now be all safe in well-covered pits or frames; while the tubers of Dahlias and bulbs of Gladioli, &c., should be stored in convenient places beyond the reach of frost; and this should also be carefully excluded from structures containing bedding plants, which should always, if well rooted, be kept as cool and quiet as possible, as it is by no means advisable to encourage growth in the absence of light and air. Nothing, however, is so inimical to bedding plants at the present season as damp; every possible care, therefore, must be taken to prevent, as far as this can be done, drip from the roofs of such houses or pits which may contain them. All dead and decaying leaves, &c., must be removed whenever necessary, and every opportunity taken which the state of the weather may afford to admit fresh air, to render the plants as hardy as possible. Should milder weather make its appearance, let store pots of such plants as the Verbena be at once well dusted with flowers of sulphur. There may also be found leisure now to take a rough estimate of the stock on hand of the various kinds of plants required for the ensuing season, and this should be compared with the list of requirements, which should have been made during the last summer or autumn; and

whenever a deficiency is shown, preparation for increasing such varieties should be made early during the ensuing year. But little, if any, advantage is likely to be gained by attempting to propagate bedding plants during the dull dark days of mid-winter. During dry or frosty weather, get, as soon as possible, a fertilising compost prepared, ready to be applied to the flower-beds and borders as soon as the spring flowering plants and bulbs are removed. It is necessary to enrich as much as possible the soil of such beds, to enable them to successfully produce two crops during each season; and it should also be borne in mind that many kinds of summer-bedding plants are exceedingly gross feeders. This compost should be frequently turned during frosty weather; frost is of itself a powerful fertiliser, and fresh surfaces can hardly be too frequently exposed to its action.—P. GRIEVE, *Culford, Bury St. Edmunds.*

Indoor Plant Department.

Ferns.—These being in a great measure at rest, and their growth matured, they are now in a condition to better withstand the effects of repeated fumigations and extra applications of the sponge, to destroy and remove their two greatest enemies, thrips and scale, than when they are in active growth. The house should therefore be fumigated three or four times, at an interval of ten or twelve days. The plants will, at this season, too, bear stronger applications of tobacco fumes than could with safety be used during their season of growth. Go carefully, and as frequently as time can be spared, with sponge and soft brush over every plant infested with scale. Cut away such fronds as are dead, but do not remove any that have even partial life in them, as it weakens the plants. In the case of vigorous-growing tree Ferns that are outstripping the space that can be afforded them, a removal of the portion of their oldest fronds whilst in full life will be found the best means of reducing their future growth within the desired limits. Any valuable kinds that it is desirable to increase and that are furnished with ripe spores, may now have such sown in shallow pans, three-parts filled with drainage; over that put a mixture of peat, broken charcoal, and small pieces of sandstone, pressing all moderately firm; water well to close up the interstices, and to prevent the spores getting too deep; after that the spores should be scattered upon the surface; then place the seed-pans in feeders two sizes larger than themselves, and keep them filled with water so as to avoid the necessity of directly watering the spores overhead.

Indoor Fruit Department.

Vines in pots, which were placed in heat in October, will now be growing rapidly, and more water will be needed as the foliage develops. Pinch the shoots two joints beyond the bunch; do not let the shoot run to a great length and then take it off at that distance, but stop it as soon as it has formed two leaves beyond the bunch, when no check will be given to the Vine or large wound made on the tender young wood. The temperature at night should be kept about 70° when these are in bloom, and be allowed to rise to 80° with sun-heat throughout the day. Shake each bunch as it comes into bloom; this distributes the pollen, and ensures a more equal and abundant set of fruit. This is not necessary with every variety in the summer time, but at this dull season, when there is no free circulation of air in the house, it is required; no manure-water should be given until the fruit is set. Where very strong firing has to be applied, and the Vine leaves are close to the hot pipes, red spiders will be very liable to appear. The parts affected should be well syringed with clean water, and if these should be limited to one Vine or a few leaves, the most certain way of dealing with them is to give them a careful sponging. If plenty of clean water is applied in time to this pest, its eradication is not difficult. Vines do not break into growth at one time. A houseful of well-ripened canes here would be a fortnight or three weeks earlier in growth than a houseful of other imperfectly ripened ones elsewhere; so that their own judgment must be the guide of many in regulating the temperature of permanently-planted Vineries. It is not judicious to exceed 60° with fire-heat until the young shoots are from 8 to 12 inches long. After that length is attained, the heat may range from 60° to 70° when they are in bloom. Clip out all decayed berries, as soon as they appear, from Grapes which are being kept. Those bottled, as well as those hanging, will keep perfectly in a temperature 2° above the freezing point in frosty weather.

Pines.—Excepting those started for fruiting, Pines must not be kept in too high a temperature at present. During a very sharp night it is better to let the thermometer fall to 45°, or even 40°, than keep up a roasting heat of 65° or 70°. Pines will winter with advantage in a much cooler atmosphere than is generally supposed. Watering must be carried on very carefully now; suckers and successful plants require the least, and will often go for months at this season without any. Those in fruit need it oftener, when manure-

water is beneficial to them. Started Queens should be watered with weak guano water, after the first watering, as young greedy roots will now be forming. Any plant, which may happen to be under a drip, should be removed, or the centre will ultimately rot out of it. Plants just showing fruit should be fully exposed to all the light and sun-heat available, or they yield reluctantly from the socket. Those in bloom, or about to bloom, should be at the hottest end of the house.—J. MUIR.

Hardy Fruit.

Next to root-pruning, mulching is one of the most important operations within the entire range of fruit culture. Cultivators, seeing the tops of their trees at rest in winter, have too readily taken it for granted that the roots have been in the same state. Hence, their utter neglect and hard treatment during the severity of the winter season. Supposed to be dormant—in a state of syncope, or suspended animation—what mattered it how cold or soddened the roots were? It mattered everything. Nature took pains to render the roots of plants frost-proof; Man has taken pains to let the frost get to them. There are few more efficient frost-resisters than leaves. When these become practically dry, hardly any degree of cold can pierce through them. These are Nature's root-protectors; left where they fall, they, and the overshadowing tops of trees, are sufficient to keep the frost from the roots. But cultivators, in their wisdom, display the heads of their trees on walls and their roots within a few inches of the surface of unclothed borders. Every leaf is raked or swept up as unsightly litter—as if the cold bare soil was not cold enough for the roots, we must needs lift them much nearer to the cold air and give them a much thinner coating of soil than ever Nature designed for them. Unavoidable results follow; the frost pierces into and through the roots, and not only paralyses growth but often ruptures tissues. Even the roots of hardy trees are only hardy under natural conditions. Disturb these conditions in one way, and it may become necessary to assist Nature in all. Nature mulches her roots with leaves; we must do likewise with something that will resist the cold with equal or greater effect. Our root-coverings should be thicker and more impenetrable than Nature's, inasmuch as we have brought the roots closer to the cold. Very fleet planting is not all gain, either in winter or summer. One of its penalties is the need of a thicker mulching at both seasons. As a rule, it may be stated that fruit-tree roots should never be frozen through; assuredly, neither Peaches, Apricots, Nectarines, nor Vines should. They are always growing, and perhaps it is in the winter chiefly that they extend into new regions and take possession of fresh feeding grounds. It is difficult on any other hypothesis to account for the extraordinary activity of root-growth from the end of October to February. But little, if any fluid is needed by the tops of deciduous trees during that period. Yet the roots will run fast and multiply to an extraordinary extent. Let the frost lay hold of them a few times and growth is arrested, extension checked, and possibly the roots of the next season obliged to feed, perforce, from the empty larder of the year before. Mulch the roots to exclude frost, and they will find new stores of food and fresh supplies for the demands of the new growing season. As to the changing of the tops of trees, also, our artificial arrangements, bring the work more upon ourselves. By shelter, supports, &c., we prevent the elements, by their action, from keeping the heads of our trees clean. Even pruning, thinning, the removal of cross branches, &c., the keeping of the trees in order, prevents them from scrubbing off Moss, Lichens, &c. We are, therefore, bound to see that the tops of trees are kept clean; Mosses, Lichens, larvæ, or insects smothered in soot, dust, and other dirt should all be scrubbed or scraped off, and, lest any incipient life remains, it is good practice to daub fruit trees over with some thick mixture, composed of such cheap ingredients as clay, soot, and lime.—D. T. FISH.

Fruit Rooms.

To keep fruit satisfactorily, a good store-room is absolutely necessary. In its construction two things should be kept in view—first, to build it so as to maintain an equable temperature, both in winter and summer; and, secondly, to provide means for free ventilation. In order to carry out my first suggestion, select a north aspect, build with hollow walls, and roof or thatch thickly with straw. Ventilation should be provided in the roof by means of sliding boards, which could be opened or shut at pleasure, and all windows should also be made to open. Some may think so much ventilation for a fruit-room unnecessary, but to ventilate freely at certain times is the only trustworthy way of keeping fruit successfully. Everybody knows that during, and especially after, frosty weather fruit "sweats," and it is nearly always after such weather that complaints are made as to its keeping badly; and, my experience is, that when ventilation is carefully attended to during and after such weather comparatively little fruit is affected. Of course, currents of air, continuously passing through the room are neither requisite nor desirable; for under

such conditions the fruit would shrivel, which I consider about as bad as decay. As a general rule fruit-rooms should be quite closed during muggy damp weather; indeed, at all times when the air is charged with moisture: but they should be opened the moment the air is drier, *i.e.*, should the fruit seem or feel the least damp. The kind of shelves which I think best, and would recommend, are such as are made of bars or laths, 4 inches wide and fixed about $\frac{1}{2}$ inch apart. Straw, paper, or other material should never be used under the fruit, which should be placed immediately on the boards, and, thus situated, air coming through the opening of the laths is permitted to play all round it. Owing to the changeableness of the weather and sudden fluctuation of temperature this has been, thus far, a bad season for keeping fruit in good condition, and when it is remembered that an equable temperature and dryness are indispensable requisites as regards good keeping, it is no wonder that so much of it has gone bad this year. Of Pears, the kinds that with us are keeping best, are Beurré Diel, Passe Colmar, Josephine de Malines, Ne Plus Meuris, Winter Nelis, Easter Beurré, Beurré Rance, Comte de Flandre, Knight's Monarch, and Glou Morceau. The sorts which we are now using are Winter Nelis, Délices de Hardenpont, Passe Colmar, Beurré Diel, and Beurré Gris d'Hiver, all of which, without exception, are extra well flavoured, a circumstance doubtless attributable to the roasting weather to which they were subjected last summer. Apples generally keep better than Pears; and this season they have formed no exception to the rule. The kinds now in use with us for dessert are Ribston Pippin, Royal Russet, King of the Pippins, Hughes's Golden Pippin, and Calville Blanche. Kitchen kinds consist of Blenheim Orange, Wellington, Alfriston, Tower of Glamis, Warner's King, and Deux-ans.—W. WILD-SMITH, *Heckfield, Hants.*

Kitchen Garden.

At the time I am writing the earth is frost-bound and covered with a mantle of snow, which latter, in the event of a continuance of severe weather, will form the best and cheapest protector of vegetable life. Snow is, in fact, the only natural covering, and on no account should it be removed from any crop in the kitchen garden (except for the purpose of gathering it for immediate use); on the contrary, if the frost is likely to be severe, and, if it can be conveniently done, additional snow may be heaped over anything that requires extra protection. It may also be banked up round frames in which tender plants are stored, and where no artificial heat is available. Snow is the only covering that does not blanch or weaken the plants over which it is placed. If it is necessary to gather Spinach before the snow melts, some care will be necessary to avoid injuring the plants. A snow shovel, made of wood, will be found the handiest implement to clear off the snow, to be followed afterwards by a light birch broom. I need hardly say, all vegetables gathered in a frozen state should be placed in cold water to thaw them before use. A stock of roots, such as Turnips, Parsnips, Carrots, Artichokes, &c., for present use, should always be kept under cover. This would be a good opportunity for providing a sufficient stock for next year of Pea and Scarlet Runner sticks, and have them trimmed and sharpened ready for use. Heaps of decomposing rubbish should be turned over, lime and salt may be scattered amongst it to destroy insects and their eggs, and prepare it for going on the land at a favourable opportunity. Now that the old year is drawing to a close, the time seems to me peculiarly opportune for suggesting that we may with propriety take a retrospective glance at the past year; search our note books and memories, hunt up, in fact, and lay bare our errors, both of omission and commission (who is without them?), and endeavour to cull a lesson from the past for our future guidance. I must also beg to be allowed to suggest to all beginners the advantages to be derived from their keeping a calendar of operations, each for himself, as carried out in the gardens in which they may be employed; especially with regard to the kitchen garden; noting down daily the sowing and planting of each crop, with any other matters respecting their culture that may be thought desirable. To this may be added the daily readings of the thermometer, and observations on the weather generally, and the amount of rainfall, when it can be accurately done. I know these things are attended to by the young men in some gardens, and it might be advantageously done in all where they are employed; and the new year, being close at hand, will be a good starting point. This matter is the more urgent as, in many large gardens, a young man engaged in the houses has but few opportunities of becoming practically acquainted with vegetable culture, and I need hardly say that any one must derive a vast benefit from a system of note-taking. If persistently carried out, not only will it aid his memory, it will also strengthen his powers of observation, and tend to confirm in his mind a regular system or method of doing things which he will find of immense advantage in his future career.—E. HOBDAV.

THE INDOOR GARDEN.

A NEW TWINING PLANT.

(CAMPSIDIUM FILICIFOLIUM.)

For particular purposes plants of elegant habit are quite as useful as those which bear beautiful flowers or gaily-tinted fruit, and few more graceful plants than this Fern-leaved Campsidium have found their way into English gardens. Our illustration gives an accurate representation of this plant, with the exception that the slender

Bull has raised it from seeds imported from the Fiji Islands. It has been awarded first-class certificates by the Royal Botanic Society, and also at South Kensington. B.

HOW TO GROW THE LISIANTHUS SUCCESSFULLY.

LISIANTHUS RUSSELLIANUS is one of the finest of decorative plants, but, owing to some supposed difficulty in growing it, it is now rarely seen. Mr. James Barnes, writing to the *Florist and Pomologist*, has recently described a mode of culture carried out by a neighbour of



Fern-leaved Campsidium (*C. filicifolium*).

shoots are often 2 or 3 feet in length, the elegantly cut foliage being of the brightest and freshest green imaginable. It may, however, be kept in a bushy state if required by means of judicious pinching, but this destroys its graceful appearance, and after all it is its trailing or twining habit which renders it so welcome an inmate of our plant stoves. In a cut state the long shoots are applicable for dinner-table decorations, or for draping the stems of March stands. It has not yet flowered in this country, and even the name is a provisional one, although it will doubtless never be known to horticulturists under any other. It grows well in a light, sandy, and rather rich compost, and when planted out it grows with tolerable rapidity. Mr.

his, Mr. Webber, of Exmouth, which is both simple and successful. Mr. Webber has only the convenience of a greenhouse and a two-light pit. In spring the pit is cleared of plants, the decayed materials turned out, and 2 feet 6 inches of well-wrought fermenting material placed inside. On this gentle heat is placed the Lisianthus seed, sown on light, open, sweet soil, and very lightly covered with sand, a bell-glass or piece of glass being put over the pot. As soon as the plants can be handled, they are pricked out in the same open kind of soil; and when they have grown a little they are potted into 60-sized pots. The fermenting materials having by this time become exhausted and sunk down, a temporary stage is formed close to the glass with a

few bricks and slips of boards, and on this the plants are now placed in saucers, the reason being that they are never watered on the surface of the soil, but tepid water is always supplied in the saucers. If the surface of the soil late in autumn and through the winter is watered, the plants are very liable to shank off or canker at the surface, and that, too, very suddenly. By the end of September the greenhouse is re-arranged with winter plants, when the warmest, lightest, and most sheltered place on the front shelf is chosen for the *Lisianthus* plants, which are there set in pans until the following spring, when they get a good shift, and are replaced on the prepared cutting bed, now again got in readiness with its fermenting materials. By this time most of the cuttings, &c., are removed, the young plants are ready for their final shift, and get more room till they begin to show bloom-buds, when they are again placed on the front greenhouse shelf to bloom. The clean pots used are drained fully one quarter of their depth with broken sherds; and the soil is healthy, sweet, well-pulverised, and tolerably light and rich, being composed of well-decomposed leaf mould, heath soil, or light turfy loam, a portion of well-decomposed cow-dung, and enough clean well-washed sharp sand, to keep all open, sweet, and porous, being always incorporated. In their full-growing season the plants may be watered with good clear liquid manure, never applying the water cold, or from autumn to spring, on the surface of the soil. The plants may be grown to any desired size, with the convenience of heat and room and large shifts. Mr. Webber's are finished off in 10-inch and 12-inch pots, and are noble healthy plants, with from three to four score or more open flowers on each plant.

WINTER BLOOMING BEGONIAS.

THESE are great favourites of mine, and I have often thought that their capabilities, from a decorative point of view, have never been half so well developed as is possible with very little extra trouble. Scarcely any other genus of plants is so distinct in habit, and but few will thrive so well under common-place treatment as these, and yet we find them well nigh banished from nine-tenths of the plant-stoves in the country, to make room for novelties of far less value from a gardener's point of view. Formerly they had the honour of a house to themselves at Kew, and few houses were more ornamental during the winter months, when their appearance was finer than at any other period of the year. Many of the best Begonias are profuse flowering plants, not the less acceptable because they persist in blooming all the year round; and then they are by no means particular as to the position or soil they occupy. You can grow the dwarf kinds in either pots or baskets, and they are equally at home, while the strong and tall growing kinds may be planted out and trained up pillars in the stove or warm conservatory, or on the back wall, or in any out-of-the-way place, just where your tender and fashionable novelties will not thrive. Recently some attention has been given to the half-hardy tuberous-rooted section, and for brilliancy of colour in the flowers, and freshness of foliage, many of these are unsurpassed; they will bloom on outdoor rock-work until cut down by the frost; but, if late-struck plants are planted out in the stove or other warm plant-house, they keep on blooming right through the winter, and supply plenty of cut flowers. As I have already stated, Begonias are suitable for pots, baskets, pillars, or rafters; but, no matter how they are grown, they are simply invaluable for the cut bloom they supply, and the flowers of Begonias are quite distinct from those of any other plants. For dinner-table decorations they are unsurpassed on account of the crystalline brilliancy of their colours, which show remarkably well under artificial light. The white kinds, as *B. spathulata* and *B. Dregei*, glisten like snowflakes, and the rosy, crimson, or scarlet-flowered species, are even more beautiful. For bouquets they are not adapted, as the flowers have a curious knack of dropping off suddenly from their stalks. Begonias are very readily propagated either by cuttings, leaves, or by division of the fleshy tuberous roots, and the soil they luxuriate in is a turfy loam and leaf mould, or rotten manure, with the addition of a little silver sand to keep the whole in a porous condition. The following kinds are great favourites, both with my employer and myself, and are grown here expressly for winter flowers. *B. Dregei*, a compact and bushy little species, about a foot in height, and nearly as much in diameter, which produces a copious supply of its white buds and

pure snow-like flowers among foliage of the most vivid green imaginable. It is valuable for furnishing the drawing-room stands, but it is rather too dense for dinner-table decoration. *B. spathulata*, an erect-growing plant, with rounded shining leaves and pearly-white flowers. *B. fuchsioides*, a well-known old favourite, that does well at the back of a sunny plant-stove; its long red shoots, clothed with bright leaflets of a metallic green tint, and enlivened by its gracefully-drooping racemes of heart-shaped coral-like buds and flowers, are admirably adapted for cutting, either for vases or other decorative purposes. I find this flowers best when planted out and trained up a wall. Our plant of it is 12 feet in height, and covers the entire back wall of a small plant stove, a position which it has occupied for nearly ten years. *B. hybrida multiflora* is a seedling similar in habit, with rosy flowers, but it is not equal to the last in beauty. *B. nitida*.—This is a strong-growing plant, which we grow up the pillars and walls of another warm plant-house—a sunny one—where it luxuriates to perfection, and is nearly always in bloom. I consider this the very best of all the flowering kinds, but it must be planted out in order to grow it to the best advantage. As a pot plant it is too straggling in habit to suit any plant grower. The foliage is large and of a pleasing bright green colour, while its large rosy flowers are produced in immense panicles, borne on long fleshy stalks from the apex of every leaf. For cutting, this is unequalled, and the flowers may be arranged along with *Calanthe Veitchii*, *Lælia anceps*, *L. autumnalis*, or the snowy *Cœlogyne cristata* without losing any of their beauty by the contrast of such lovely rivals. *B. Saundersonii* is a well-known winter-bloomer, with bright green foliage, good compact habit, and bears a profusion of deep rosy flowers in drooping clusters. This and *B. insignis* are valuable for pot culture. I have about two dozen plants of each in 48 and 32-sized pots, and they are just now, together with a large batch of *B. Dregei*, admired by everyone who sees them. *B. Wagneriana* and *B. hydrocotylifolia* are both good winter bloomers, but one of my favourites is the old *B. manicata*, which, as a table plant, is, I think, unsurpassed in its way. Well-grown plants in flat pans (I use these for this species, because its fleshy rhizomes require a considerable surface to develop themselves), are valuable for table decoration. When well grown the plant is about 1 foot or 14 inches in height, and from the axil of nearly every leaf rises a fleshy semi-transparent pale green or pink-tinted stem, about 16 or 18 inches high, and these branch into compound panicles, the ultimate divisions being very slender, and each terminated by a delicate rosy heart-shaped tint or flesh-coloured flower. There is a delicate lace-like beauty about the inflorescence of this plant when seen under artificial light that makes it a great favourite with ladies. Another splendid plant, either for pots or planted out as a climber, is *B. Daviesii*, a free-blooming kind, seldom seen in private collections; I was fortunate in obtaining cuttings from the Kew collection some years ago, and have found it a most valuable plant for winter decoration. In habit it resembles *B. Saundersonii*, but its flowers are much larger, and, if possible, it is a more profuse bloomer. All the above are well worth growing by all gardeners who require a supply of decorative plants and cut flowers during the duldest portion of the year.

J. CHURCHILL.

Whalley Range.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Pandanus Veitchii at Drumlanrig.—This is the finest of all the Screw Pines. Excellent specimens of it may be seen in the plant stoves at Drumlanrig, where they are grown in 14-inch pots, well drained and filled with a compost of strong loam, peat, and silver sand. Its leaves are broad and massive, and their colourings rich and distinct, the dark green and white stripes being well defined. This *Pandanus* is alike ornamental in the plant stove, and on the dinner table when not too large.—M. J.

Ipomœa Horsfalliæ in a Pine-stove.—As a stove climber, to flower from September till February, this has no equal. The back wall of one of the Pine-stoves at Drumlanrig is covered with it to the extent of 60 feet, and the great clusters of crimson-scarlet flowers which it produces have a very striking effect. It is useful in a cut state, and single blooms of it are favourites with ladies for hair ornamentation. Buds of it before they expand are nearly black, and form a nice contrast with the open flowers. The foliage, too, which is a very dark green, forms a good covering for a wall, even when the plant is not in bloom. This *Ipomœa* grows freely in nearly any kind of soil with which plenty of sand is mixed.—J. Muir.

THE FRUIT GARDEN.

PINE GROWING AT DRUMLANRIG.

PINES are grown very extensively, and to perfection, at this place. Mr. David Thomson, the highly talented gardener there, has long been justly regarded as one of the best Pine growers in the country, and his present productions fully sustain his reputation. While at Archerfield, the Pines there under his care were ever worth a visit, so perfectly were they developed in every way—some of the Smooth Cayenne fruit attaining the handsome weight of 11 lb., in low pits—and those who had the privilege of seeing them will understand what the Drumlarnig ones are like when I say they are now up to the Archerfield standard. This has never been the case at Drumlarnig until now, for, although Pines were cultivated there for years before Mr. Thomson took their management, they were of a very ordinary character some six years ago. The stock there now has no connection with that of the past, either in lineal descent or mode of cultivation. The pots and plants are about half, while the fruits are double, the size they formerly were. These are all improvements and great *desiderata* with the intelligent Pine grower. The Pine accommodation at Drumlarnig is spacious, there being numerous houses and pits for the plants in their different stages of growth; but the circumstances under which they are grown are not of the most favourable kind. Nearly all the stoves are glazed with rough thick-rolled plate glass. This has its advocates and advantages, which, however, do not exist at Drumlarnig, where the sun is seldom visible more than two days in seven throughout the entire year. Under this obscure glass it is as if they grew continually under shading; and those who know anything about Pines are aware how liable they are to become drawn and unhealthy when this is the case. I did not see an unhealthy or drawn plant there. Every leaf was of a deep blackish-green colour, which is not only pleasing to the eye of the Pine grower, but to every one who admires fresh-coloured vegetation. Queens for fruiting early and later in the season were plentiful. Five degrees more of heat than what they were resting in would have started every plant into fruit in a fortnight. I had to look closely into many of them to convince myself that they were not in fruit, they were so open in the centre. The plants were exceedingly dwarf, thick around the stem, with short leaves, nearly as thick as those of an Agave. It must be remembered that these plants were not grown in large day-light houses, but in narrow pits, with their sashes glazed with the rolled plate glass I have mentioned; another large house contained the autumn fruiters, many of them were cut, and there were dozens of them still to cut—these consisted of Smooths, Charlotte Rothschild, and Prince Albert; 5 lbs., 6 lbs., and 7 lbs., was the average size of the finely formed fruits; no large quantity was ripe at once, but they succeeded one another. Large batches of this kind are often collected from other beds as they show fruit (I have a houseful in fruit together); but the whole of those I speak of started into fruit successively, and not a single plant had been removed from the time they were first potted into the 12-inch pots in which they were ripening their fruit. The appearance of this house before any fruits were cut from it must have been very grand. The plants were of the same substantial caste as the Queens. Strange to say, the crowns were perfectly well proportioned, and in no way elongated. In other houses the fruit was swelling to succeed those nearer maturity. Those just in the embryo were of vigorous formation, and promised well for future development. The suckers were splendid examples of what young stock should be. These were in 6 and 8-inch pots; they are afterwards shifted into others of the fruiting size. The soil used is a yellowish fibrous loam, mixed with a quantity of pure ground bones; leaves, which can be plentifully collected from the woods and parks, are made use of for plunging material. Mr. Thomson gives preference to the tan over these, and, now that he has got his own excellent system introduced, he intends using this substance more than he has hitherto done.

J. MUIR.

PROTECTING STRAWBERRY PLANTS IN WINTER.

NOTHING in connection with early Strawberry culture is more important than protection during the late autumn and early winter months, as, however well they are managed through the summer, neglect in this respect generally proves baneful to the plants, and prevents anything like real success. Where a large quantity of plants is grown for forcing it is very often difficult to procure frame room to the necessary extent. I am, therefore, having a long span-roofed pit erected for the purpose. Such a pit has been used for some time by my friend Mr. Owen, of Broughton Hall, in this neighbourhood, who grows and forces Strawberries with greater success than anyone I know. As soon as the heavy autumn rains set in the

plants are carried to their winter quarters and packed closely together with leaves, the object being to retain a certain amount of moisture, at the same time excluding all heavy rains and frost. The advantage of such a protection will be evident enough to anyone acquainted with the management of Strawberry plants for forcing. I have often noticed good plants, well grown in summer, half ruined during the months of October and November. Very often they are taken to the bottom of a brick wall, piled one above the other, and allowed to become dust dry, so that the hand could be inserted between the side of the ball and the pot. Now, I will guarantee that the same plants packed with leaves in a cold pit or frame, as described, will bear double the quantity of fruit the following March or April. I have also noticed, too often, the front shelf of a Vinery or Peach house (where perhaps a little fire-heat is kept up to protect bedding plants, &c.) occupied with Strawberry pots, subject to the same baking above described; an earth pit, or some loose slabs temporarily erected and covered with some old sashes will answer the purpose far better. We invariably hear of success, seldom of failures; after succeeding well with early and mid-early Strawberries last season I was much disappointed by having about 300 Sir Charles Napiers very much injured by the heavy frost in February, when I fancied all was safe, the consequence being that although the plants were only meant to come in before those outside, they only have one-third of the crop from those early forced. Little mishaps set one a-thinking, and having planted a quantity out of 3-inch pots the previous autumn, I had them transferred from the open ground into some frames over decayed hot-beds, where there was just the slightest heat; watered well a day before they were lifted, they were moved with fine balls, and continued growing, although the flower spikes were being thrown up, and they have borne a moderate crop of handsome fruit, which filled in what would otherwise have been a blank, before Strawberries were gathered from the outside. We sometimes err on the side of quick forcing; I believe success to be more a question of time, all things being well managed previously. I know no fruit more likely to be injured by quick forcing than the Strawberry. My first batch of 500 are put in about December 1st, and we gather fruit from the 15th to the 20th of March; indeed, I have put the first batch in on the 1st of November, and did not gather before the 20th of March; but I should state that the variety I use for early work is what is called The Duke in this neighbourhood—Duc de Malakoff or Vicomtesse Héricart de Thury, which latter is its proper name. Black Prince can, of course, be gathered much earlier, but the Prince so deceived me once that I reject him now for indoor work, and I have substituted The Duke, allowing plenty of time until the fruit is well set, and then they are driven along rapidly. I only force four varieties to any extent, viz., Duc de Malakoff, Oscar or Wilmots, Sir Harry, Sir Charles Napier, and British Queen.

W. HINDS.

Otterspool Gardens, Liverpool.

HOW TO PREVENT THE SYRIAN GRAPE FROM SHANKING.

MR. MUIR, after writing (see p. 453) of late Grapes, says, "As whites, White Lady Downes, Trebbiano, and the true Syrian are good sorts." I should be glad to obtain further information respecting the Syrian, especially as to its liability to shanking, and the proper treatment for preventing or curing this very serious defect. Six years ago I planted a Vine of this variety in a mixed late house along with Muscats, Mrs. Pince, Gros Colman, Aramon, and White Toquay. It has grown vigorously, making good short-jointed wood, and producing plenty of fine large bunches, which have every season gone on as well as could be desired till they ought to be on their last stage of swelling, when they shank off all to pieces, leaving rarely a dozen berries on the remains of each bunch to ripen. The few berries that are left are large, oval in shape, colour well, and have a very high flavour. The Vine has never been over-cropped, as I have not yet obtained a single bunch from it, and, when thinning, I never leave more bunches on it than it ought to carry. I have been told by an old gardener that the Syrian is apt to shank. Can you suggest a remedy.—P. Q.

[The Syrian should not shank where Muscats and Gros Colman succeed, as they are much more liable to shank than it. Shanking is by no means the common habit of the Syrian. In a general way, with its free-growing character and robust constitution, it is quite free from failings of this and all other kinds. Is it the only variety in the house so affected? If the whole are subject to this malady the matter would be easily understood. From my acquaintance of your correspondent's low-lying neighbourhood, it is one very likely to be moribund to the Vine, especially if efficient drainage is not provided. Bad drainage is a great cause of shanking, and must

undergo the first consideration and examination. In cases where a whole houseful of Vines are affected, the soil which forms the border must be taken out to the depth of 3 feet, leaving only enough to protect the principal roots about the base of the stem. When all is cleared, the bottom should be completely covered with 3 inches of concrete, at an incline from the house of 1 inch in 24 inches, to the extreme front of the border, where a large main drain should be placed in a position to convey away the water at once. Place rows of 3-inch drain tiles 12 feet apart to run from the house into the main drain, fill up between these with broken stones, and cover the whole over with fresh-cut turf, laid grassy side downwards. The formation is then properly complete and ready for the compost. If not more than six years old, the same soil, with a liberal addition of substantial fibry turf and $\frac{1}{2}$ -inch bones, will do again. Into this the Vines soon root freely afresh, and, if Syrian, or any other kind, shanks after such efficient precautions, then it is very evident that the vicinity is one unsuitable for that variety. Instances of this kind are to be found all over the country; but not often with the Syrian; however, when such is the case, grafting or inarching is a remedy for the evil. Muscat of Alexandria is one of the best stocks for it, and with this in his house "P. Q." will have no difficulty in profitably disposing of his Vine, with every certainty of success in future. Grape shanking is not one of those inconveniences which the application of a little more or less air, or a few more degrees of heat at a certain time will remove. It is a serious functional derangement, which can only be cured by radical treatment. A short time ago I saw the Syrian in great perfection at a considerable distance from here, and had the grower of it to choose, Syrian is not the first variety he would dispense with.—J. MUIR.]

PEARSON'S GOLDEN QUEEN GRAPE.

PERMIT me to supplement the numerous remarks which have appeared in your pages upon the merits of this Grape, as I feel certain it is destined to occupy a very prominent position as a generally useful late Grape. I never saw a Vine and its produce possessing such a combination of true late winter characters as those so conspicuously shown in Golden Queen; I feel at a loss which of its qualities to admire most, and cannot give any one preference over another. Its constitution is very robust; the leaves are thicker and of greater substance than those of any other kind of Vine; the wood is not very thick, but free in growth; it ripens well in a cool Fig-house, and produces fruit in a most prolific manner. The original rod, which is four years old, had sixteen bunches on it this season, and it is only about the same number of feet long; six of them were still hanging when I saw them a few days ago, and had an opportunity of noting their strikingly handsome appearance. The flavour is very superior, as described by Mr. Ingram (p. 473), and, altogether, its character, so far as I could learn from inquiry and minute examination, which is the best of all tests, is quite irreproachable. I tasted it last autumn, when some berries of it were sent to a friend of mine, and the estimate I formed of it then, although of no mean description, was far short of what I really found it at Chilwell. Its stock there might well have been sent out this winter, but Mr. Pearson, to avoid disappointment in any form whatever, is going to cut them all back, that all may be strong next year. Messrs. David and William Thomson, Mr. Speed, Mr. Douglas, and many other noteworthy horticulturists, are justly praising it as one of the best late white Grapes extant. M. J.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Scotch versus English Pots.—I have sometimes found a single pot amongst a large number of accurately 10-inch ones measure 9 $\frac{1}{2}$ inches, but this is not the general size. Strictly adhering to sizes, I cannot understand how an English 12-inch pot only measures 10 inches, as stated by your correspondent (see p. 578). I have ordered a quantity of English pots, by name and measurement 12 inches, and if for these I receive 10-inch ones, I certainly will not consider them 12-inch ones. Ten-inch pots in Scotland are made no more perpendicular than any other size made there; and to assert that any or all of them are made in this form is a mistake.—J. MUIR.

The St. Germain Pear.—What treatment do you recommend for a large bush tree of this Pear, which yields fair and large crops of nice-looking, but perfectly tasteless, fruit? The tree is too large to move. Our garden is a sheltered one, and its soil, which is light, seems to suit other Pears very well, as we generally have good crops.—E. L. J. [The St. Germain is never much better than a stewing Pear, even in such a fine summer as the past. As the tree is too large for shifting, perhaps root-pruning some of the largest outlying roots might have the effect of making the fruit smaller and better flavoured. The best way, however, in order to make sure of getting some good fruit off the tree, would be to cut the branches off in the spring and insert grafts of some good sorts on the stumps left. They should be cut off at a suitable height for grafting, and the grafts should be inserted between the old wood and the bark. When tied firmly round with matting and clayed over, such grafts will grow rapidly, and soon make a fruitful tree.—W. TILLEY.]

A RAT-PROOF FENCE.

GRANARIES, corn cribs, or poultry houses, may be made rat-proof, by means of a wire fence which we here illustrate, and for which we are indebted to the *Journal d' Agriculture Pratique*. This fence has been introduced with perfect success, into the Garden of Acclimatation in Paris, and into our own Zoological Gardens,



Fig. 1.—End of Fence.

for the purpose of preventing the depredations of rats. No rat can surmount this fence. It is made of thin wire bars placed an inch apart, and affixed to heavier cross bars; the ends of the bars being curved outwards, as shown in fig. 1. When the building to be protected is placed upon the ground, and it is desired to prevent rats from undermining it, two rows of bricks or tiles are placed beneath the fence, one in an upright position, and sunk a few inches beneath the surface, and the other horizontally and projecting outwards, forming a bench. When the rats dig down to burrow beneath the building, they follow the first tile until they meet the second. Being stopped here, they burrow along the angle formed by the two tiles until they are tired, without being able to penetrate beneath the building. If they attempt to climb the wires, they get into the gallery formed by the upper curve, but can go no further. The fence, of course, is made of such a height that a rat cannot leap over it. In the Garden of Acclimatation, the fence is about 2 feet in height, and is found perfectly effective. Fig. 2 shows a piece of the fence complete. This contrivance is also used to entrap rats, which it does in large numbers. A small park or enclosure is surrounded with this fence, protected at the bottom with tiles as already explained. An opening is made, by which the rats may enter but cannot return. Seeing a possible escape by means of the fence, they enter readily, but once within they discover that some

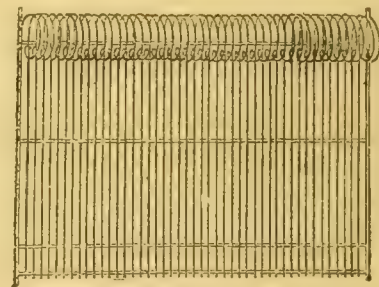


Fig. 2.—Fence complete.

men know more a rat. There are many modifications of this simple contrivance, which will, doubtless, occur to our readers, by which farm buildings, grain stacks, and other places which suffer greatly from rats, may be made secure from their depredations.

Limekiln Heating.—Mr. John Cowan writes to us to state that the system of heating announced as invented originally by Mr. John Collis, has nothing in common with Mr. Cowan's system. Mr. Cowan adds, that, according to Mr. Collis's own statement, his limekiln is an open one without a chimney, and, therefore, quite distinct from those constructed in many gardens by Mr. Cowan.

Messenger's Patent Valves.—For safety and convenience these valves are unsurpassed. The stop-valve inside is worked by a small outside wheel in such a way that it may be set to the eighth part of an inch or turned full on with the greatest facility, and it always remains steadily in whatever position it is put, for any length of time. I never knew one of these valves to get out of order—an important matter, for the boilers themselves may as well be out of order as the valves. Some dozens of them are in use at the Tweed Vineyard, and all of them work satisfactorily.—J. MUIR.

Consumption of Fruit in Paris.—In Paris (we learn from *Les Mondes*) the quantity of fruit consumed annually is something enormous. There is brought annually into that large city more than 5,000,000 kilos of raisins, the duty on which amounts to about 300,000 francs (at the rate of 5 francs 75 cents per kilog). The cultivation of Grapes for raisin-making in France is being considerably extended.

MINERAL MANURES.

UNDER this head we advert to those manurial substances which are obtained from the crust of the earth and which are spoken of as mineral, in contradistinction to farmyard manure, night-soil, shambles-offal, and the like, which are of organic origin, and result from the decay, secretions, and exuviae of plants and animals. These mineral manures play an important part in modern agriculture, both in top-dressing for pastures, and as feeders and stimulants to grain and green crops. Though generally spoken of as "mineral," most of them (peat, marl, chalk, coprolites, osite, guano, &c.), owe their origin to organic agency, but are now separated from "organic" because they are more or less mineralised, and form component portions of the rocky crust. However much the soils of a farm may be benefited by admixture and drainage, they cannot continue to be cropped without the application of manures. Every crop, as may be seen by an analysis of its ashes, takes so much mineral matter from the soil on which it grew. In course of time this mineral matter will become exhausted, and the plant, deprived of its appropriate nourishment, will cease to flourish. To maintain the standard of fertility is the great object of manuring; and whatever will restore to the soil in a state of solubility what the plant has withdrawn—for plants can take no food in by their roots and spongeoles, save in solution—becomes a manure. The manures obtained from the mineral kingdom are very numerous, but the most important and abundant are those of a carbonaceous, calcareous, and saline nature, yielding to the growing plant carbon, silica, lime, soda, potash, and other essential ingredients. Different crops require, of course, different manures, and what may start Turnips into luxuriant growth may have comparatively little effect upon a field of Clover. The mode and amount of application belong to the art of husbandry; geology deals only with the nature, occurrence, and abundance of the manurial substance. Numerous experiments, however, have been made with the mineral manures, and the special results recorded in the "Journal of the Royal Agricultural Society of England," and in the "Transactions of the Highland and Agricultural Society of Scotland," to both of which the cultivator may refer with advantage.

Carbonaceous Manures.

First among these mineral manures we may notice peat, which occurs largely as a surface accumulation in most situations in all temperate and coldly-temperate countries. In our own country, especially in Scotland, Ireland, and the northern counties of England, it can be obtained in inexhaustible supplies. It is strictly of vegetable origin, contains little earthy matter, is found from the "turf" now growing to the old compact "peat," 20 or 30 feet in depth, and often covering areas thousands of acres in extent. When dug up and exposed to the weather, it crumbles into a dark pulverulent mass, and in this state, either alone or in admixture with quicklime, has been applied with beneficial results to stiff loams and clays. It has been also fermented in admixture with farmyard manure, thereby not only increasing the mass, but absorbing and fixing the ammonia which escapes during fermentation. And in many cases it has been charred by combustion in smothered heaps, and the dry ashes applied with excellent effect to soils deficient in vegetable or carbonaceous matter. According to Professor Johnston, "charred peat forms, likewise, an excellent absorbent for the liquids of the farmyard and the stable, and for drying up dissolved bones." Coal-dust or "slack" is sometimes spread on cold stiff clays, but with little effect, we presume, beyond that of cutting them up and rendering them more friable. Coal-ashes and the light porous coke from shale retorts, tell with better effect; and soot, which is merely charcoal in a very fine state of sub-division, is often employed with wonderful results as a top-dressing to pastures, as well as to grain crops. Its fertilising properties are mainly due to the ammonia, sulphate of lime, nitric acid, and certain other ingredients which it contains.

Calcareous Manures.

Marl, which occurs in lakes, or is found at or near the surface, in bogs and morasses, the sites of obliterated lakes, is a soft earthy carbonate of lime, resulting from the shells of fresh-water molluscs (*Paludina*, *Limnea*, &c.) and other minute animal organisms. It generally occurs in layers and patches, from one to several feet in thickness; and when the shelly matter predominates, it is spoken of as shell-marl; where the silty matter prevails, as clay-marl. It is now seldom used; but about the beginning of the present century was largely dug or dredged up, and applied in a raw state as a top-dressing to pastures, or as a corrective to clayey and peaty soils. Another calcareous substance often applied with beneficial results to stiff clayey soils is the shell-sand (shelly, coralline, and other limey *débris*) which occurs largely along certain portions of our sea-coast. Consisting, for the most part, of carbonate of lime, with a certain amount of the phosphate, it not only acts as a breaker-up of

the stiff-textured clays, but from its gradual solution by the carbonated rain-water supplies to the soil an important element of fertility. Considering the vast amount of this material which lies scattered along our shores, and which is easily manipulated, it looks like ignorant neglect on the part of our farmers that so little of it should be employed. In the "Report on the Geology of Devon, Cornwall, and Somerset (1839)," it is stated that, in 1811, Mr. Worgan estimated the cost of the land carriage of this sand in Cornwall at more than £30,000 per annum. Large quantities are obtained at the Dunbar Sands, in Padstow Harbour, the annual amount estimated at 100,000 tons. It has been calculated that 5,600,000 cubic feet of sand, chiefly composed of comminuted sea-shells, are annually taken from the coasts of Cornwall and Devon, and spread over the land in the interior as a mineral manure. It is also applied in some of the western islands, where the shores are thickly fringed with it, with beneficial effect to hill pastures and peaty soils; but notwithstanding these facts and figures, the substance, considering its abundance and obvious utility, is strangely neglected. It abounds on the shores of France, and, according to M. Burat, is highly valued as a cheap and efficient manure, as well as an improver of stiff clayey soils. Like marl and shell-sand, the upper chalk of the south of England (a soft earthy carbonate of lime) is sometimes broken down and applied to clayey soils and pastures. Applied in this way, at the rate of thirty and forty loads an acre, it acts chemically as a manure, in rendering the soil richer, and mechanically, in rendering it lighter and more friable. Though now a lime-rock of great extent, and several hundred feet in thickness, chalk is mainly of organic origin—about 80 per cent. of its mass being composed of the minute shields of foraminifera, similar to those now forming the calcareous ooze of the mid-Atlantic. Gypsum, or sulphate of lime, is applied in a similar way to Grass-lands in this country, at the rate of 2 or 3 cwt. per acre; but in Germany and the United States of America it is largely used in general husbandry, and with marked effect on crops of Maize, Pea, Bean, and Clover. Gypsum occurs crystallised and massive, in various formations; but the most extensive beds are found in connection with rock-salt in the new red sand-stone, and alternating with the clays and marls of tertiary basins. In Britain abundant supplies can be obtained in Chester, Nottinghamshire, Derbyshire, Westmoreland, and other localities; and not a little of that which is raised finds its way to the artificial manure factories. But while the carbonates of lime (marl, shell, and chalk) are applied in the raw, mild, or uncaustic condition, limestone in general is more extensively used in the caustic or quicklime state. In this condition it is extensively used, not only as a top-dressing, but incorporated in the soil as a feeder, dissolver, and stimulant—its effects being partly mechanical and partly chemical. "They are mechanical," according to Professor Johnston—"as by slaking, the burned lime can be reduced to a much finer and more bulky powder than the limestone could be by any mechanical means; and they are chemical, inasmuch as by burning the lime is brought into a more active and caustic state, and is, at the same time, mixed with variable proportions of sulphate and silicate of lime (evolved in the kiln) which may render it more useful to the growing crops." The lime-stones are largely developed in the British Islands, and occur in all the geological systems—metamorphic, silurian, devonian, carboniferous, permian, (magnesian limestone), oolitic, and cretaceous. There are few districts that cannot command a supply within their own area, or, at all events, at comparatively little expense from some contiguous area. Besides the carbonates and sulphates of lime, the phosphates are also extensively used and highly valued as mineral manures. A crystallised variety under the name of apatite (56 lime, 44 phosphoric acid) is obtained from veins in the older rocks; is of various shades of colour, white, yellowish white, and greenish white; stands 5 in the scale of hardness, and has a specific gravity of 3 or 3.25. It occurs in various countries, Norway, Spain, Bohemia, Switzerland, France, &c., and is often accompanied by a massive variety, which is known as phosphorite. This phosphorite is the more abundant product, and consists of phosphorite of lime 81, fluato of lime 14, with iron oxide and silica. These hard phosphates, of which there are several varieties, require expensive mining and reduction, and hence they have given way, in a great degree to the phosphatic nodules and concretions of the greensands and tertiary formations. Phosphatic nodules, coprolites, or "cops," as they are familiarly termed, are occasionally concretions round bones and true coprolites or fossil excrement; but, generally speaking, they are mere nodular or concretionary masses of a soft and earthy texture. They are found in the greensand and crag formations of England, and also in the greensands of France, in layers and in sporadic deposits, from a few inches to several feet in thickness, and when moderately pure contain about 50 per cent. of phosphate of lime. Well-cleaned examples from Cambridgeshire have been found to yield—phosphates, 61, carbonates, 28, insoluble silicious matter, 7, and water, with

traces of organic matters, 4. Their dissemination in the crag and greensand is rather uncertain; but £80, £100, and even, it is said, as much as £400 per acre has been paid for the right to dig and remove them from the estate. According to Hunt's "Mineral Statistics," the amount raised in 1872 was estimated at 35,000 tons, value £50,000. Similar deposits of a much more extensive nature occur in the tertiary formations of the Carolinas, New Jersey, and Georgia, and are largely used in the United States of America, as well as imported into Britain for the manufacture of artificial manures. Picked, crushed, and treated with sulphuric acid (and variously mixed with other substances), they form the "super-phosphates" of commerce—every manufacturer adopting his own treatment and proportions of admixture. Whatever the admixture, the great object of the sulphuric acid is to convert a considerable part of the insoluble earthy phosphate of lime into sulphate and soluble superphosphate. Plants take in no food save in a state of solution, and the main value of a manure (other things being equal) is its capability of being dissolved by the moisture of the soil according to the requirements of the crop to which it is applied. What is termed osite, Sombrero guano, or Sombrerite, is another phosphate of lime used also in the manufacture of artificial manures. It is obtained from Sombrero, one of the West India Islands—an islet about two and half miles long, from a half to three-fourths of a mile wide, and not more than 20 or 30 feet above the level of the sea. The islet is entirely composed of this substance, which consists of a breccia of bones of turtles and other marine vertebrata, coral *débris*, &c., collected when the area was a shallow shoal, and before its elevation above the water. Since its elevation the rains have carried down through the mass the dissolved droppings of birds (guano), and cemented the whole into a compact mass of valuable phosphate. The true guano (huano of the Peruvians), though of animal origin, has undergone so much alteration by internal chemical change, and occurs in such masses, that it may, without much error, be treated as a mineral manure. It consists mainly of the droppings of countless sea-fowl, intermingled with their skeletons and eggs, the decomposed bodies and bones of fishes, seals, and other marine creatures frequenting the islands on which it is deposited. Though obtained principally from the rocks and islets that stud the Bolivian and Peruvian coasts, it accumulates in all rainless regions—the drier the latitude, the thicker and richer the deposit. On some of these islets it is found in great thickness (40, 60, 80, and in some places, according to Dr. Scherzer, 120 feet), and, considering, its necessarily slow accumulation, must be of vast antiquity. The digging of the deposits and the frequency of modern shipping has greatly disturbed the birds, and much less is now deposited than in former times. About five-and-twenty years ago, considerable quantities were obtained from Ichaboe, and other places on the west coast of Africa; but as absolute dryness is necessary to the preservation of the ammoniacal salts, which constitute the chief value of guano, these supplies brought little more than half the price of the Peruvian, and we believe are now entirely exhausted. The amount imported into Britain from Peru, since 1844, is estimated at five and half million tons, valued at sixty-four millions sterling; but this rate of importation cannot long continue—for, according to the estimate of the British Consul at Callao, in 1873, the whole of the exportable guano which Peru had then possessed did not much exceed three million tons. The following analyses, from Johnston's "Agricultural Chemistry," show the relative composition of American and African guanios:—

	Peruvian.	Bolivian.	Ichaboe.	Saldanha.
Water	13.09	6.21	16.71	18.35
Organic matter containing ammonia	53.17	55.52	46.61	22.14
Common salt and sulphate of soda	4.63	6.31	12.92	5.73
Carbonate of lime	4.18	3.87	0.27	1.49
Phosphate of lime and magnesia	23.54	25.68	22.40	50.22
Sand	1.30	1.71	0.52	2.02

Saline Manures.

Besides these calcareous minerals and guanios, a considerable number of saline substances have recently been employed with wonderful effect, both as top-dressings and as incorporated manures. The chief of these are sulphate of ammonia, carbonates of potash and soda, nitrates of potash and soda, sulphate of potash, common salt, sulphate of soda, silicates of soda and potash, and sulphate of magnesia. Most of these are manufactured artificially, as sulphate of ammonia, for example, from the ammoniacal liquor of gas and paraffin oil works; but many also occur in a crude or impure state in deposits often of considerable magnitude. In and around salt lakes like those of Central Asia, along dried-up lakes and deserts like those of Asia and Africa, and over extensive reaches like the salinas of South America, these salts occur in abundance, and constitute important articles of commerce. The desiccated lakes of Central Asia have been described by various travellers as flat expanses, covered during the dry season with white

efflorescences of various salts, from a few inches to 2 or 3 feet in thickness, and over which their horses had to pass, treading up to the knees among crackling crystals of great beauty and purity. Mr. Shaw, in his recent travels in Tartary, rode through desiccated lake sites, covered with a thin crust of sandy soil, but consisting beneath of beds of common salts, and salts of soda and potash, varying from 1 to 3 feet in depth, and often of almost transparent purity. The salinas of South America, which at present yield our main supplies, are described as superficial deposits, occupying extensive plains on the Pacific, or rainless side of the Andes, and usually covered with a white saline efflorescence or crystalline incrustation. They occur at all elevations, from a few feet to several thousand feet above the sea level, and are evidently the remains of old sea reaches and lagoons that have been desiccated by the upheaval of the land. They extend for about 600 miles north and south, but find their greatest development between latitudes 19° and 25° south, and at distances varying from 10 to 40 miles inland. The usual salts occurring in these salinas, as in those near Iquique and the desert of Atacama, are common salt or muriate of soda, sulphate of magnesia, sulphate of soda, sulphate of soda and lime, soda-alum, magnesia-alum, gypsum, anhydrite, along with chloride of calcium, iodide and bromide of sodium, carbonate and nitrate of soda, and in some places borate of lime and borax. The saline plain of Taramugal, for example, which is 3,000 feet above the sea-level, consists, in some places of many feet in thickness, of sand indurated with salt, in others of soft sand with crystals of nitrate, and occasionally of true caleches of concreted soda and stony *débris*. These saline sands and gravels are dug and lixiviated on the spot, the liquor evaporated, and the crude salts exported at the rate of many thousand tons per annum. We have said nothing of artificial manures, whose name is legion, but restricted our notice chiefly to manurial substances which occur native in the crust of the earth. No doubt these substances enter largely into the artificial manures of commerce; but other substances of an organic nature are also employed, taking the manufacture more under the head of chemical technology than of applied geology. Indeed it is often difficult to say what enters into the composition of many of these artificial manures—ashes, peat-mould, sawdust, gypsum, chalk, salt, sand, loam, and other substances still more worthless and objectionable than the worst of these.

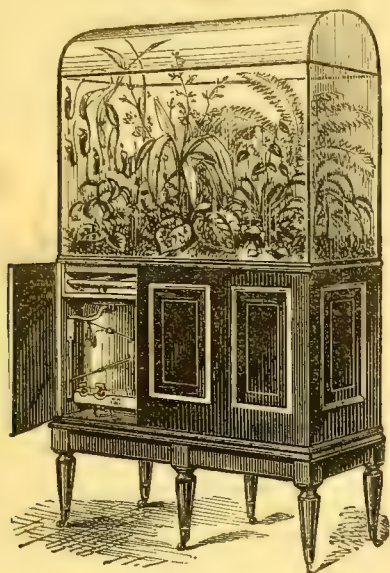
In the preceding paragraphs we have endeavoured to explain as fully as our limits will permit, the relation that subsist between geology and agriculture. Those refer to the soils upon which the cultivator has to operate, whether they be soils of disintegration, resulting from and directly affected by the rocks on which they rest—or soils of transport, which have been weathered and wasted from distant rocks and laid down by various agencies in the situations they now occupy. They refer also to the sub-soils on which the arable soils rest, and the influence these may exert on their drainage, texture, and fertility. Much of the agricultural surface of Britain consists of what the farmer terms "made soil"—soils reclaimed from stony bouldery wastes, heathy, peaty moorlands, and plashy swamps and morasses, by blasting and removal of boulders, by turfing and burning, and by draining. But whether reclaimed or natural, soils are not alike fertile, some being too sandy, too clayey, too peaty, or too calcareous; and the question arises, How far their defects may be remedied by admixture with other soils, so as at once to impart to them the necessary composition and texture? Besides fertile admixture, there also arises the question of drainage, by which the superfluous moisture may be got rid of most effectually, and at the cheapest rate, so as to render the soil drier and mellow, and more easy of cultivation, more friable, and thereby more permeable by air and moisture, and deeper and softer, that the crops may readily extend their rootlets in search of the nourishment they require. As this nourishment or manure is largely obtained from the mineral kingdom, it becomes necessary, in the next place, to advert to the more important of the mineral manures—treating of their geological nature, their abundance, and the facilities with which they can be obtained. Whether carbonaceous, calcareous, or saline, these mineral manures are yearly assuming a greater importance; hence the value of an intelligent acquaintance with them to the practical agriculturist. Considering, therefore, the nature of soils and sub-soils, their composition, texture, and relations to the subjacent rocks; and considering also the importance of drainage, and the application of mineral manures—all of which involve some acquaintance with the materials and structure of the earth—the relations of geology to agriculture must be sufficiently obvious and deserving of study alike by the landlord and farmer.—*Economic Geology.*

The Field relates how a root from an Elm tree filled up a drain tile 150 yards distant.

THE GARDEN IN THE HOUSE.

A DRAWING-ROOM PLANT STOVE.

We have lately seen a heated plant case of rather a novel character, manufactured by Messrs. Dick Radclyffe & Co., of High Holborn, in which both heat and moisture are completely under the control of the cultivator, its perfect action being regulated by a very ingenious application of mercury in a manner analagous to that employed in the "Victoria thermometer," brought into public notice some years ago. Either gas, oil, or spirit lamps may be used for heating purposes in this case, the heated water from a small water Jacket boiler being circulated through leaden pipes, by which means a genial bottom and top-heat are both secured. The inventor, Mr. Boyle, informs us that he has succeeded in growing most of the Anæctochili in a case of this description, while many other foliage plants, Orchids and Ferns, of the most tender description, may be grown in the drawing-room by means of this invention. Those who are aware of the results attainable even in an unheated Wardian case, or glass shade,



Boyle's Heated Plant-case.

will at once see that here an immense field is opened out to them in the culture of the smaller stove plants, and its introduction indicates a new era in domestic plant culture. B.

Hanging Basket of Cut Flowers.—If fitted up lightly these have a pretty effect; indeed, as far as appearance goes, they are far more effective than those furnished with growing plants, but require more attention, as they have to be constantly refilled with cut flowers; but, again, they do not require such constant watering, which, in a sitting room, is an advantage not to be overlooked. Baskets which are to be used for cut flowers should be fitted inside with a zinc basin, the shape and size of the basket; the outside the basin should be painted the same colour as the wire-work, and should have at the bottom a hole for drainage, as I should advise that *Selaginella denticulata* be grown over the surface of the sand with which the basin is filled, and in which the stems of the flowers are to be inserted. As to what flowers should be employed, that will, as a matter of course, depend on the season of the year, and on the resources of the decorator. Round the outer edge, long sprays of drooping plants should be inserted, so as to hang down gracefully all round. There are many flowering and foliage varieties, that are well adapted for this purpose, but none more so than long tendrils of Ivy, which long retain their freshness; in fact, if left for any length of time, they will take root in the damp sand. Both the green and variegated kinds, if mingled in the arrangement, have a very pleasing effect.—A. HASSARD.

Anemone blanda.—Our correspondents will oblige us by sending blooms of this *Anemone*, *Iris stylosa*, or of any of the winter-flowering Croci in fresh and good condition.

A SELECTION OF PLANTS AND SHRUBS FOR A COOL ROOM.

WITH A TEMPERATURE OF FROM 38° TO 45° FAHR.

ACCORDING to Dr. Regel, the following rather extensive list of plants and shrubs comprehends the names of kinds which he has proved to do well in cool rooms:

<i>Acacia</i> <i>alata</i> <i>decumbens</i> <i>dentifera</i> <i>dodonæifolia</i> <i>falcata</i> <i>floribunda</i> <i>heterophylla</i> <i>juniperina</i> <i>longifolia</i> <i>Melanoxylon</i> <i>micrantha</i> <i>mucronata</i> <i>Oxycedrus</i> <i>verticillata</i> <i>Acorus</i> <i>gramineus</i>, fol. <i>var.</i> <i>Agapanthus</i> <i>umbellatus</i> <i>Agathaea</i> <i>amelloides</i> <i>Agave</i> <i>americana</i>, and all the other <i>species</i> <i>Anigozanthus</i> <i>coccineus</i> <i>Araucaria</i> <i>excelsa</i> <i>Arbutus</i> <i>Andrachne</i> <i>Unedo</i> <i>Arundinaria</i> <i>falcata</i> <i>Aspidium</i> <i>decompositum</i>, <i>with vars.</i> <i>falcatum</i> <i>proliferum</i> <i>Shepherdii</i> <i>Sieboldi</i> <i>varium</i> <i>Asplenium</i> <i>furcatum</i> <i>maritimum</i> <i>Geringianum</i> <i>Aucuba</i> <i>japonica</i>, <i>with</i> <i>vars.</i> <i>himalaica</i> <i>Azalea</i> <i>amona</i> <i>indica</i>, <i>with</i> <i>vars.</i> <i>ledifolia</i> <i>Azara</i> <i>Gilliesii</i> <i>integrifolia</i> <i>Bellis</i> <i>perennis</i> fl. pl. <i>Bambusa</i> <i>nigra</i> <i>reticulata</i> <i>Berberis</i> <i>Aquifolium</i> <i>acuticantha</i> <i>Beallii</i> <i>Darwinii</i> <i>Fortunei</i> <i>japonica</i> <i>repens</i> <i>Beaufortia</i> <i>decussata</i> <i>splendens</i> <i>Bouvardia</i> <i>hirtella</i> <i>Jaquini</i> <i>leiantha</i> <i>splendens</i> <i>versicolor</i> <i>Calceolaria</i> <i>integrifolia</i> <i>hybrida</i> <i>rugosa</i> <i>violacea</i> <i>Camphora</i> <i>officinalis</i> <i>Cassine</i> <i>capensis</i> <i>Ceanothus</i> <i>azureus</i> <i>Citrus</i> <i>Aurantium</i>, <i>with vars.</i> <i>Clematis</i> <i>azurea</i> <i>florida</i> <i>Jackmanni</i>	<i>Clematis</i> <i>patens</i> <i>lanuginosa</i> <i>Clethra</i> <i>arborea</i> <i>Cœlestina</i> <i>ageratoides</i> <i>Cordylino</i> <i>australis</i> <i>Banksii</i> <i>Cotoneaster</i> <i>buxifolia</i> <i>microphylla</i> <i>rotundifolia</i> <i>Cuphea</i> <i>ignea</i> <i>Cytisus</i> <i>albus</i> <i>chrysobotrys</i> <i>Daphne</i> <i>hybrida</i> <i>indica</i> <i>odora</i> <i>Datura</i> <i>arborea</i> <i>sanguinea</i> <i>cornigera</i> <i>suaveolens</i> <i>Dianella</i> <i>cerulea</i> <i>elegans</i> <i>strumosa</i> <i>Dianthus</i> <i>Caryophyllus</i> <i>Diplacus</i> <i>glutinosus</i> <i>punicus</i> <i>Elæagnus</i> <i>conserta</i> <i>pungens</i>, <i>with</i> <i>vars.</i> <i>Escallonia</i> <i>macrantha</i> <i>rubra</i> <i>Eucomis</i> <i>punctata</i> <i>Eugenia</i> <i>Ugni</i> <i>Euonymus</i> <i>japonicus</i>, <i>with</i> <i>vars.</i> <i>Eupatorium</i> <i>Haageanum</i> <i>Weinmanni-</i> <i>anum</i> <i>Fragaria</i> <i>indica</i> <i>Fuchsia</i> <i>coccinea</i>, <i>with</i> <i>vars.</i> <i>corymbiflora</i> <i>fulgens</i> <i>globosa</i> <i>gracilis</i> <i>microphylla</i> <i>Gardenia</i> <i>Maruba</i> <i>Gazania</i> <i>splendens</i> <i>Genista</i> <i>canariensis</i> <i>ramosissima</i> <i>Spachiana</i> <i>Gnidia</i> <i>juniperifolia</i> <i>Greigia</i> <i>sphacelata</i> <i>Grevillea</i> <i>punica</i> <i>robusta</i> <i>sulphurea</i> <i>Heliotropium</i> <i>grandiflorum</i>, <i>with vars.</i> <i>peruvianum</i>, <i>with vars.</i> <i>Hydrangea</i> <i>Hortensia</i>, <i>with</i> <i>vars.</i> <i>Jambosa</i> <i>australis</i> <i>Jasminum</i> <i>azoricum</i> <i>fruticans</i> <i>grandiflorum</i> <i>odoratissimum</i> <i>revolutum</i> <i>Laurus</i> <i>nobilis</i>	<i>Leptospermum</i> <i>acuticarpum</i> <i>baccatum</i> <i>Cunninghami</i> <i>grandiflorum</i> <i>lanigerum</i> <i>scoparium</i>, <i>with</i> <i>vars.</i> <i>stellatum</i> <i>sericeum</i> <i>Libertia</i> <i>formosa</i> <i>paniculata</i> <i>pulchella</i> <i>Ligustrum</i> <i>ovalifolium</i> <i>Lonicera</i> <i>confusa</i> <i>fragrantissima</i> <i>brachypoda</i>, fol. <i>var.</i> <i>Magnolia</i> <i>grandiflora</i> <i>Mesembryanthemum</i> <i>blandum</i> <i>coccineum</i> <i>cultratum</i> <i>spectabile</i> <i>tigrinum</i> <i>variable</i> <i>violaceum</i> <i>Myosotis</i> <i>azorica</i> <i>Myrsine</i> <i>apicana</i> <i>Myrtus</i> <i>bullata</i> <i>communis</i>, <i>with</i> <i>vars.</i> <i>pulchella</i> <i>Nerium</i> <i>Oleander</i>, <i>with</i> <i>vars.</i> <i>Olea</i> <i>europæa</i> <i>Oldenlandia</i> <i>Deppeana</i> <i>Ophiopogon</i> <i>Jaburan</i>, fol. <i>var.</i> <i>Oreodaphne</i> <i>foetens</i> <i>regalis</i> <i>Pelargonium</i> <i>apiculatum</i> <i>crispum</i> <i>fragrans</i> <i>graveolens</i> <i>hybridum</i> <i>inquians</i>, <i>with</i> <i>vars.</i> <i>lateripes</i> <i>macranthum</i> <i>lobatum</i> <i>pellatum</i> <i>quercifolium</i> <i>sanguineum</i> <i>tricolor</i> <i>triste</i> <i>odoratissimum</i> <i>zonale</i>, <i>with</i> <i>vars.</i> <i>Petunia</i> <i>nyctaginiflora</i> <i>violacea</i> <i>Phibica</i> <i>acerosa</i> <i>ericoides</i> <i>paniculata</i> <i>thymifolia</i> <i>Phormium</i> <i>tenax</i> <i>Photinia</i> <i>serrulata</i> <i>Pinus</i> <i>excelsa</i> <i>fitifolia</i> <i>Hartwegii</i> <i>leiophylla</i> <i>Montezumæ</i> <i>palustris</i> <i>Teocote</i> <i>Pittosporum</i> <i>Tobira</i> <i>undulatum</i> <i>Plumbago</i> <i>capensis</i> <i>coccinea</i>	<i>Polygala</i> <i>myrtifolia</i> <i>Polypodium</i> <i>Lingua</i> <i>Prunus</i> <i>Laurocerasus</i>, <i>with vars.</i> <i>Pteris</i> <i>cretica</i> <i>flabellata</i> <i>japonica</i> <i>longifolia</i> <i>tremula</i> <i>Punica</i> <i>Granatum</i>, <i>with</i> <i>vars.</i> <i>Rhamnus</i> <i>Alaternus</i> <i>Rhaphiolepis</i> <i>phaeostemon</i> <i>Rhodesia</i> <i>japonica</i>, <i>with</i> <i>vars.</i> <i>Rhus</i> <i>lucida</i> <i>Richardia</i> <i>æthiopica</i> <i>alb-maculata</i> <i>Rosmarinus</i> <i>officinalis</i> <i>Ruscus</i> <i>aculeatus</i> <i>androgynus</i> <i>Hypoglossum</i> <i>Hypophyllum</i> <i>Salvia</i> <i>fulgens</i> <i>patens</i> <i>Grahami</i> <i>obtusata</i> <i>officinalis</i>, tri- <i>color</i> <i>Senecio</i> <i>Cineraria</i> <i>Petasites</i> <i>populifolius</i> <i>Serissa</i> <i>foetida</i> <i>Siphocampylus</i> <i>bicolor</i> <i>Skimmia</i> <i>japonica</i> <i>Smilax</i> <i>aspera</i> <i>mauritanica</i> <i>Solanum</i> <i>Capsicastrum</i> <i>jasmoides</i> <i>Pseudo-Capsi-</i> <i>cum</i> <i>Sollya</i> <i>heterophylla</i> <i>Stenocarpus</i> <i>Cunninghami</i> <i>salignus</i> <i>Tasmanian</i> <i>aromatica</i> <i>Tecoma</i> <i>jasmoides</i> <i>Tetranthera</i> <i>laurifolia</i> <i>Teucrium</i> <i>Marum</i> <i>Thea</i> <i>Bohea</i> <i>viridis</i> <i>Thuja</i> <i>occidentalis</i> <i>gigantea</i> <i>Thujiopsis</i> <i>dolabrata</i> <i>Tristania</i> <i>albicans</i> <i>laurina</i> <i>nerifolia</i> <i>Veronica</i> <i>Andersoni</i> <i>Lindleyana</i> <i>speciosa</i> <i>Viburnum</i> <i>Tinus</i> <i>Widdingtonia</i> <i>cupressoides</i> <i>Woodwardia</i> <i>radicans</i> <i>Zenobia</i> <i>floribunda</i> <i>racemosa</i> <i>speciosa</i>
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WHAT THE PELARGONIUM SOCIETY HAS TO DO.

THE objects of this society cannot be understood, or nobody would fail to see its importance. Few people appear to know what a number of species of Pelargonium have been at different periods introduced from the Cape into this country; and how few of them are now to be found in any collection! I have myself more than fifty species; but these are nothing to those which, looking at London's "Hortus Britannicus," must have been known, at some time, to cultivators in this country. Now, when we reflect that all our beautiful show kinds—French, fancy, zonal, nosegay, and double varieties—have originated from these species, not forgetting such old favourites as Unique, Mangel's Variegated, Sapefloreus, Quercifolium coccineum, Little Pet, &c., surely we may expect to effect crosses, the results of which may be valuable. To this end we offer £3 and £2 for six distinct ornamental species, the intention being to provide, as it were, raw materials for the hybridist. Then we offer prizes of £2 and £1 for the best hybrids, that all may see what each has accomplished. Liberal prizes are also offered, open to all growers, English and foreign, for zonals and nosegays, including a class of thirty distinct plants in small pots, in order that the lovers of this useful family may have an opportunity of seeing the best. What is there in all this to provoke opposition? As to Mr. Irvine's remarks (see p. 578), if the results obtained from crossing two plants of a distinct family or species is the production of a plant which does not happen to please him, is the practice of crossing and hybridising to be discouraged? What would our gardens be if all varieties so produced were to be destroyed? Would he like, either, in the case of fruits or flowers, to return to species only? Is there any more force in the objection to personal names being attached to florists' varieties of any flower? London strongly objected, and I think rightly, to botanical names of Latin and Greek origin being attached to mere varieties of any plant. Perhaps Mr. Irvine would like the Lancashire Gooseberry grower to christen his Rough Red "*Rugosus coccineus*." I should like to see societies for the improvement of every class of plants in cultivation. To bring together men engaged in a common object must tend to mutual improvement. The man of narrow mind, whose great object has been to keep the little he knows secret from all, soon finds he knows but little, and with the hope of knowing more, will soon be anxious to contribute his mite of knowledge to the common stock. Then again, how far discussions, in which cultivators, hybridists, and botanists are concerned, are interesting, can only be known to those who have taken part in them. Some appear to think that the greatest object of those who try their hands at hybridisation and crossing is money making. This is a mistake; like inventors they will go on, because they must go on, whether they make money or not. The man who has raised a new plant from seed feels he has effected something, which the French express by the word "*creation*." If it is the result of what had been before thought a difficult or impossible cross, no doubt a feeling of pride mingles with his pleasure; and perhaps it is quite an after-thought how much he can make of it in the way of money. It was no mean motive, I presume, which induced Major Clarke to take to the crossing of Cotton. The late Mr. Cunningham, of Edinburgh, derived more pleasure from teasing the *savans* with his *Brianthus erectus*—a cross between a *Rhododendron* and an Irish Heath—than ever he did from selling it. Who believes that the late Mr. Donald Beaton thought chiefly of money when he spent his time amongst his favourites? No sensible man despises well-gotten money, but there is a pleasure in the attempt to discover what is possible in the way of raising new fruits and flowers quite apart from money making. Let Mr. Irvine, then, reconsider the matter; though our object may not be his, we may gain knowledge which may be useful to others engaged in improving quite a different class of plants. If he joins us, perhaps he will find more than he expects to interest him. I only know of one class who are likely not only to refuse to join our society, but from whom we expect opposition—those whose only object has hitherto been to get hold of a new plant for as little as possible, and send it out to the public for as much as they can get, at the same time leaving the public to believe that the credit of raising it belonged to them. This class is sure to object to our rule that every plant shall have the raiser's name attached to it. Honour to whom honour is due is our motto, and I know men who will strongly object to this. We do not expect to see their names as members of our society, or to get their guineas for our prize list.

Chilwell.

J. R. PEARSON.

Luxuriant Vine Growth the best Cure for Vine Pest.—M. Signoret has just sent in to the Academy of Sciences an interesting paper on the different species of Phylloxera; he has, moreover, made known a new type of that insect, possessing all the characters

of Phylloxera, but, in some respects, differing from it. If, instead of ascribing the Phylloxera epidemic to a few solitary insects possibly imported from Ohio or California, viticulturists had dropped that part of science which consists in raising artificial boundaries, where Nature has created none, and simply considered Phylloxera in the light of vermin attacking every diseased or weakened plant, they might probably have had recourse to the most rational way of ridding their Vineyards of such pests, *i.e.*, letting them alone—without pruning at all for a few years. Good long wild canes would tend to promote good long roots and healthy rootlets, and thus choke off the pest by excess of sap. Of course, the weakest plants might die, but part of the Vineyard might be saved. It would be incredible if cart-load after cart-load of prunings could be taken away from a Vineyard, year after year; and for hundreds of generations Vines could be propagated from cuttings, without a deleterious effect on the plants being experienced. We see that pruning has had that effect upon some very ancient kinds of Pears, as for instance, Chaumontel and St. Germain, which, if they have not died out completely everywhere, have survived only on account of having been grown now and then, and here and there, as *bona-fide* orchard standards, thus keeping up in certain localities a supply of healthy grafts. The "*degenerescence*" of Pears (an erroneous French term) has long since been proved to the satisfaction of the Société centrale d'Horticulture of France, not to be in the slightest degree attributable to a prolonged reproduction from grafts, as the grafts of healthy plants invariably produce an equally healthy tree, provided the operation has been properly performed.—F. T. P.

THE HOUSEHOLD.

Three Little Dishes of Apples.—1. Roll out a little piece of light pastry tolerably thin; place in it a large Apple of a good baking kind, pared and cored; cover it well with the paste and secure it firmly; bake it in a temperate oven. Four of these turnovers (as they are called) make a dish; they are good either hot or cold. 2. Stew six or eight good baking Apples (pared and cored) until they are tender, let them cool, and mix them with the yolks of two eggs and enough sugar to sweeten them. Spread this mixture on a dish, cover the top with fine bread crumbs and a small quantity of dissolved butter, and bake for a quarter of an hour. 3. Boil 1½ lbs. of loaf sugar in a pint of water for a few minutes, add 2 lbs. of good cooking Apples; let these all boil together until the mixture is tolerably stiff; just before removing it from the fire, add the grated rind of two lemons; press it into moulds which have been previously dipped into cold water (and not wiped), when this *gâteau* (as it is called) is turned out on a dish, ornament it with blanched almonds; pour a custard or some whipped cream round it.

Apples.—A very nice way of using Apples is to slice some into a dish as for a pie, with some sugar and Lemon peel. Make a thick custard of corn flour, milk, and sugar, flavoured with Almonds; pour the custard on the Apples, and bake an hour or till the custard is brown.

Lemon Pie.—For four pies: To twelve eggs, whites and yolks, well beaten together, put four teaspoonfuls and eight level tablespoonfuls of white coffee sugar; rub eight level tablespoonfuls of sifted flour into one teaspoonful of cold water; add the grated rinds and the juice of six large Lemons; mix all together, and bake immediately in one crust. For each pie, beat until stiff the whites of two eggs; add two tablespoonfuls of pounded loaf sugar; put on this frosting and bake three minutes.

Lemon Butter for Tarts.—1 lb. of pounded loaf sugar, ½ lb. of butter beaten to a cream, the grated rinds of two Lemons, and the juice; let these simmer in a well-tinned saucepan on the fire for ten minutes, then add five eggs, well beaten, stir the mixture over the fire for a few minutes longer, but do not allow it to boil (a little more sugar may be necessary), it is then ready for use.

PERSONAL.

THE following members constitute the committee of the Pelargonium Society for the first year, viz.:—Mr. H. Webb, chairman; Messrs. W. Browne, H. Cannell, J. Denny, M.D., J. Fraser, P. Grieve, J. George, Dr. Hogg, S. Hibberd, W. B. Kellock, F. R. Kinghorn, T. Laxton, J. Laing, F. Miles, T. Moore, Dr. Masters, J. R. Pearson, R. B. Postans, J. D. Pawle, Rev. C. P. Peach, Jean Sisley, G. Smith; Dr. Denny, treasurer; Mr. T. Moore, hon. sec.—Mr. T. Baines, one of the most successful plant growers of the day, proposes to practice as a landscape gardener, and also to give advice on cultivation and garden management. Mr. Baines's address is Avenue Road, Southgate.—Mr. George Thomson, hitherto superintendent of the out-door department at the Crystal Palace, will, with the new year, take charge of the entire horticultural department, in doors and out, at the Crystal Palace.

